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Ad Hoc Open-ended Informal Working Group to study issues relating to the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction
New York, 19-23 August 2013

Intersessional workshops aimed at improving understanding of the issues and clarifying key questions as an input to the work of the Working Group in accordance with the terms of reference annexed to General Assembly resolution 67/78

Summary of proceedings prepared by the Co-Chairs of the Working Group

1. Pursuant to paragraph 182 of General Assembly resolution 67/78, two intersessional workshops were convened by the Secretary-General at United Nations Headquarters, on 2 and 3 May and on 6 and 7 May 2013, respectively. The workshops were held with a view to improving understanding of the issues related to the conservation and sustainable use of marine biodiversity in areas beyond national jurisdiction and to clarifying key questions as an input to the work of the Ad Hoc Open-ended Informal Working Group to study issues relating to the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction ("the Working Group").

2. In accordance with the modalities set out in the terms of reference annexed to General Assembly resolution 67/78, the two workshops addressed the following topics related to the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction: marine genetic resources, and conservation and management tools, including area-based management and environmental impact assessments. Both workshops also considered issues related to international cooperation, as well as capacity-building and the transfer of marine technology.

3. The workshops were presided over by the two Co-Chairs of the Working Group, Palitha T. B. Kohona (Sri Lanka) and Liesbeth Lijnzaad (Netherlands), appointed by the President of the sixty-seventh session of the General Assembly, in accordance with paragraph 80 of Assembly resolution 60/30.

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4. Following consultations with Member States, the Co-Chairs organized each workshop in panels, which consisted of presentations by experts invited by the Co-Chairs followed by discussions, as reflected in the format and organization of work for the intersessional workshops (annex). Experts were selected on the basis of nominations received from Member States and as identified by the Co-Chairs, having due regard to the need to ensure equitable geographic representation as well as balanced representation of all relevant areas of expertise to cover the subjects of the workshops, as required by the terms of reference. The panels were intended to provide a forum for exploring any relevant aspect of the panel topics in greater depth and specificity, without presupposing any outcomes of the deliberations of and without reiterating discussions held in the Working Group.

5. Representatives from 68 Member States, 16 intergovernmental organizations and other bodies and 9 non-governmental organizations attended the workshops.

6. In accordance with the terms of reference annexed to resolution 67/78, the outcome of the workshops consists of the present summary of proceedings prepared by the Co-Chairs for transmittal as an input to the work of the Working Group. Owing to space constraints, the present summary focuses on the discussions held following the presentations. The presentations and additional materials provided by the experts are available on the website of the Division for Ocean Affairs and the Law of the Sea ("the Division") (www.un.org/Depts/los/biodiversityworkinggroup/biodiversityworkinggroup.htm).

I. Workshop on marine genetic resources

7. The workshop on marine genetic resources, held on 2 and 3 May 2013, included eight panels which addressed the issues identified in the terms of reference annexed to resolution 67/78 and outlined below.

A. Panel 1 — Meaning and scope; Extent and types of research, uses and applications

8. The first panel included the following presentations: "Basics of marine genetic resources" by Jianming Chen, Third Institute of Oceanography, State Oceanic Administration of China; "Marine genetic resources in areas beyond national jurisdiction — clarifying terminology and constraining expectations" by Kim Juniper, NEPTUNE Canada, University of Victoria, Canada; and "Marine microbiological research and possible applications" by Kazuhiro Kitazawa, Japan Agency for Marine-Earth Science and Technology.

9. In the ensuing discussions on the meaning and scope of the expression "marine genetic resources", a panellist noted that a number of relevant definitions, including of "genetic resources", were provided in existing legal instruments such as the 1992 Convention on Biological Diversity and its 2010 Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization ("the Nagoya Protocol"). The view was expressed that there might still be a need to further consider some of those definitions to address the uncertainties and ambiguities therein, as well as to standardize terminology.

10. In response to requests for clarification on the uses and applications of genetic resources, including the probability of commercial success from the utilization of marine genetic resources, a panellist explained that despite the limited knowledge of marine resources, including genetic resources, it was estimated that the odds of finding a commercially valuable compound were higher for marine organisms given the broader diversity of organisms in the oceans as compared with land. It was noted that it remained difficult to assess whether the potential of genetic resources of areas beyond national jurisdiction was different from that of genetic resources of areas within national jurisdiction. The panellist also drew attention to the possible value added of exploiting the marine biomass related to seabed mining considering the large quantity of sediment harvested by seabed mining companies, most of which contained microbes.

11. It was explained that the process of research began with collection at sea, followed by on-board or shore-based lab analysis. In that regard, while basic analysis could take place on board the research vessel, a panellist observed that laboratories on land were better equipped for detailed analysis of the samples. In most cases, samples were collected and preserved on board for future analysis on land, with the exception of live organisms, which required immediate analysis on board the research vessel.

12. It was observed that currently, scientific research on the genetic diversity of the oceans was mostly State-funded and carried out predominantly by developed countries. A panellist noted that current practices showed that State funding usually covered the actual collection and initial description of compounds. However, the process was not linear and it was often difficult to identify the point at which the private sector came into play or when it had recognized something of interest from the results of academic research that could trigger its longer-term involvement and investment.

13. The need for capacity-building and transfer of marine technology to level the playing field with regard to scientific research related to marine genetic resources was highlighted. It was also noted that databases, such as GenBank, were becoming more accessible to all users and that some developed States had been collaborating with developing countries. The Census of Marine Life, an international research programme, was cited as one example of such collaboration. However, it was also observed that collaboration between developed and developing countries was mostly carried out on a small scale, and often consisted of ad hoc activities on a bilateral basis.

14. It was recognized that the process of developing commercially viable products was slow and costly. Clarification was sought as to whether the value of marine genetic resources was inherent or resulted from the work carried out throughout the research and development process. In that regard, a panellist expressed the view that the value lay in the compounds identified as a result of an initial screening, which could then be reproduced in laboratory.

15. It was remarked that the lack of available information in patent documents on the exact geographical origin of marine genetic resources used in the development of an invention posed challenges. It was often impossible to establish which patents related to inventions based on marine genetic resources of areas beyond national jurisdiction. However, a panellist observed that since most research was taking place in coastal areas of tropical countries, it could be inferred that compounds used in

patented inventions also came from those areas. It was noted that efforts were under way to better identify the location and environment of sampled resources. A panellist also indicated that it was too early to determine whether areas within national jurisdiction or those beyond national jurisdiction would yield more promising compounds from a commercial point of view.

16. Some of the uses of marine genetic resources that were highlighted included: research on life and the origins of life; pharmaceuticals; bioremediation; and development of biofuels from marine algae. However, it was difficult to say which sector (e.g., public or private) was more involved in applications for patents.

17. A view was expressed that an implementing agreement to the United Nations Convention on the Law of the Sea should be adopted to address access to, and benefit-sharing from, the utilization of marine genetic resources of areas beyond national jurisdiction.

B. Panel 2 — Impacts and challenges to marine biodiversity beyond areas of national jurisdiction

18. The second panel included the following presentations: "Why should marine genetic resources be conserved?" by Ester Serrão, Centre for Earth Sciences, Faculty of Science and Technology, University of the Algarve, Portugal; and "Requirements for marine resources and approaches for managing the future" by Adam Ismail, Global Organization for EPA and DHA Omega-3, United States of America.

19. In the discussions that followed, it was reaffirmed that even though, to date, more species had been identified on land than at sea, the genetic diversity of the oceans was richer and might offer greater opportunities for future uses, including industrial applications of extremophiles.

20. The causes of biodiversity loss in the oceans, including loss of genetic diversity, and their effect on the production of ecosystem services were addressed. A panellist indicated that microbes played an important role in ecosystem functioning, including by regulating the climate, the absorption of methane before it was released into the atmosphere, as well as in bioremediation. It was highlighted that fishing, in particular overfishing, was a primary source of negative impacts on marine genetic resources, including through reduction of fish populations, removal of top predators and overproduction of biomass. In particular, it was noted that seamounts, which are habitats for several species, as well as coral and the sediments of the ocean floor were affected by destructive fishing practices, including trawling, as well as by drilling.

21. The negative impact of mining was also highlighted, particularly with regard to the unique bacteria and microbes found in ocean floor sediments as well as various vent species which occur in narrow corridors in the oceans.

22. It was noted that ocean acidification and water temperature rise were also affecting genetic diversity. However, such phenomena were more difficult to address as they were not localized but took place on a global scale.

23. Ways to preserve marine genetic resource diversity were discussed. In that regard, a panellist noted that genetic loss could often take place unnoticed. Another

panellist observed that the research needed for measurements that would allow assessing how much of the catch should be kept in order to preserve marine genetic diversity was not currently being carried out. The need for this baseline information to prevent collapse of stocks and to promote recovery was highlighted. In that regard, it was suggested that temporary catch limits could be used to preserve marine genetic diversity. Baseline information would also assist with regard to the impacts of seabed mining before mining licences were granted. The possible future role of the International Seabed Authority with respect to marine genetic resources was raised in that regard.

C. Panel 3 — Technological, environmental, social and economic aspects

24. The third panel included the following presentations: "Environmental aspects of marine genetic resources" by Marjo Vierros, Institute of Advanced Studies, United Nations University, and "Marine genetic resources: technical challenges values" by Sophie Arnaud-Haond, Institut français de recherche pour l'exploitation de la mer.

25. In the ensuing discussions, limitations in oceanographic skills and molecular biology, as well as the high costs of research and development related to marine genetic resources were highlighted.

26. A panellist reiterated that it was still a challenge to identify the geographic areas of origin of marine genetic resources used in patented inventions, with the possible exception of the high ratio of patents related to organisms from hydrothermal vents. It was observed that that could be attributed to the practice of preventive patenting or to improvements in technology which allowed easier identification of valuable resources from, and access to, those ecosystems.

27. In relation to patents based on species that spanned areas within and beyond national jurisdiction, a panellist observed that some discussions were taking place in the context of the Convention on Biological Diversity regarding transboundary genetic resources. It was pointed out that the practice relating to gas resources shared between countries could also be considered for management purposes.

28. The need for incentives to improve capacity-building and access to resources was emphasized, in particular in relation to oceanographic tools and molecular technologies. In that context, participation in research cruises, exchange programmes and patent pools was mentioned. Reference was also made to the International Drug Purchase Facility (UNITAID) as an example of an innovative financing mechanism which supported, for example, the Medicines Patent Pool, whereby pharmaceutical patent holders voluntarily licensed their drug to other drug manufacturers in exchange for royalty payment. The other manufacturers could then produce cheap generic versions of the drug.

29. With regard to the environmental impacts of the sampling of marine genetic resources, it was observed that such impacts ranged from minimal to non-existent when the size of the samples was small and the collection was a one-off event. Such impacts could increase if repeated collections or great quantities of samples were necessary. Impacts were also more likely when targeted organisms were rare, had a restricted distribution, or were located in pristine or sensitive environments. The

view was expressed that since marine genetic resources were encoding information and such information could be replicated, there was no need for additional samples. A panellist acknowledged that the use of marine genetic resources usually involved the extraction of genetic information from a sample for subsequent analysis and culture in a laboratory. However, should it be impossible to carry out a laboratory analysis or culture, there might be a need to procure additional living resources. That would not qualify as a sampling activity but as harvesting. It was anticipated that the need for the latter would likely become less common with advancements in molecular biotechnology. However, some organisms, such as krill or Sargasso weed, could still require significant harvesting.

30. A panellist drew attention to the development of voluntary codes of conduct to address possible impacts.

31. A panellist observed that environmental impact assessments and strategic environmental assessments were rarely undertaken in connection with research related to marine genetic resources, which made it difficult to assess cumulative impacts. Specific obligations for environmental impact assessments in global and regional instruments were recalled.

D. Panel 4 — Access-related issues; Types of benefits and benefit-sharing

32. The fourth panel included the following presentations: "Access to marine genetic resources: collecting organisms and facilitating samples and data" by Kjersti Lie Gabrielsen, Marbank, Norwegian Institute of Marine Research; "Exploring different benefits and benefit-sharing approaches" by Thomas Greiber, Environmental Law Centre, International Union for Conservation of Nature, Switzerland; and "Marine genetic resources: benefit-sharing and obstacles" by Marc Slattery, University of Mississippi, United States of America.

33. During the discussions that followed, some of the difficulties in developing and implementing benefit-sharing arrangements for marine genetic resources in areas beyond national jurisdiction were highlighted. In particular, the difficulty of identifying partners for such arrangements compared to the bilateral approach that existed for genetic resources within national jurisdiction was pointed out. A panellist expressed the view that the benefit-sharing and prior informed consent provisions of the Nagoya Protocol would not apply to resources obtained in areas beyond national jurisdiction, as there was no specific State with which to share benefits. The issue was raised of how non-monetary benefits might be shared among a wide group of States. A panellist observed that, in such cases, the benefits could be shared with all States through the allocation of those benefits towards addressing global issues, such as climate change. In that regard, it was also useful to consider the diffuse societal benefits that could be had from increased scientific knowledge. Partnerships were also cited as examples of sharing of non-monetary benefits. However, a panellist noted that partnerships were often created on the basis of informal personal contacts between researchers in various countries and academic institutions, since identifying the responsible entity in a governmental structure could sometimes be difficult.

34. The arrangement under the International Treaty on Plant Genetic Resources for Food and Agriculture of the Food and Agriculture Organization of the United

Nations (FAO) (hereafter "FAO International Treaty") was cited as an example of multilateral benefit-sharing that included the possibility of monetary and non-monetary benefits, such as the funding of research projects and access to samples. A panellist also recalled that the sharing of monetary benefits through a public trust fund was envisaged under the Nagoya Protocol. Reservations were expressed regarding the fairness of current benefit-sharing arrangements.

35. A panellist suggested that a number of provisions of the United Nations Convention on the Law of the Sea, including the general provisions related to marine scientific research, embodied some aspect of benefit-sharing. The view was expressed, however, that the regime established for the Area was a better example of such aspects under the Convention, since the provisions of Part XIII relating to the participation of coastal States' scientists and to data, samples and research results reflected a counterpart to the possibility for a researching State to access areas under the jurisdiction of a coastal State and use its natural resources rather than benefit-sharing.

36. Examples of specific domestic access and benefit-sharing regimes were also discussed. Under Norwegian law, for example, a permit was required for marine samples to be taken from areas within national jurisdiction and for samples to be taken by Norwegian nationals from areas beyond national jurisdiction. However, concerns were expressed over the difficulties in tracing where marine genetic resources originated. Uncertainty was also expressed as to how to ensure that activities relating to marine genetic resources in areas under the jurisdiction of developing States would not violate the sovereign rights of those States. In that regard, a panellist observed that access agreements needed to be understandable by, and respect the jurisdiction and sovereignty of, the coastal States concerned. In that regard, developing States could benefit from the example of access agreements developed in other sectors, including the forest sector. The possibility of sharing patent rights with developing coastal States was raised. A panellist observed that whereas patents were usually only held by those who made a discovery, the benefits arising out of the use of such patents could be shared.

37. Regarding the respective roles of public and private funds in research, a panellist explained that both public and private funds contributed to scientific research leading to the development of pharmaceutical products, but there was a broad spectrum of ways in which States approached resource management and research funding. It was observed, however, that a large part of the costs were borne by the private sector as States usually provided funding for an initial short-to-medium phase and the pharmaceutical sector usually bore the cost for longer-term research. Regarding the priorities for research activities, a panellist noted that universities defined the research agenda and if no useful compound emerged for future applications, researchers would continue their basic research projects. It was also observed that accidental discoveries were more likely to be made by academia than by industry.

38. The potential value of products derived from research on marine genetic resources was discussed. A panellist suggested that large commercial profits from marine genetic resources were still rare and emphasis should therefore be on the sharing of the non-monetary benefits resulting from scientific research. However, it was noted that the future potential of marine genetic resources was significant and expected to increase, in particular for microorganisms. Moreover, it was explained

that the benefits for industrial uses would become available more quickly because fewer tests were necessary for industrial uses compared with those required for pharmaceutical uses.

39. Definitions of bioprospecting and marine scientific research were discussed. In that connection, it was recalled that all activities of research in the marine environment qualified as marine scientific research under the United Nations Convention on the Law of the Sea. A view was expressed that bioprospecting was not defined in the Convention, and the proposed definitions of bioprospecting left out part of the activities carried out on board ships by research institutions in the context of pure research but which did not necessarily involve the search for genes. A panellist observed that the distinction between pure and applied research was not always clear-cut but the nature of bioprospecting was to look for commercially valuable compounds. In that regard, policy instruments might need to take into account such developing trends in research. In that context, some panellists also noted that most of the material collected was the result of academic research and that shifts in the strategies of companies had occurred whereby those companies had reduced their own research activities and were instead buying licences and lead compounds from smaller academic groups and companies.

E. Panel 5 — Intellectual property rights issues

40. The fifth panel included the following presentations: "Appropriation of marine genetic resources through intellectual property rights" by Carlos Correa, Center for Interdisciplinary Studies on Industrial Property and Economics Law, University of Buenos Aires; "Infringement and innovation in respect of access and benefit-sharing in areas beyond national jurisdiction" by Norman Siebrasse, Faculty of Law, University of New Brunswick, Canada; and "Monitoring marine genetic resources using taxonomic and patent data" by Paul Oldham, Institute of Advanced Studies, United Nations University.

41. During the ensuing discussions, it was noted that some of the problems of the existing patent system were patent trolls and thickets, which impeded innovation. In light of the fact that there was a need for benefit-sharing mechanisms that avoided those practices, reference was made to the possibility of using open innovation approaches that would particularly benefit developing countries. In that connection, a panellist noted that there was also industry interest in a system that would lead to advances in technology without the challenges associated with the patent system.

42. The view was expressed that given that the ultimate goal of research on genetic resources was the development of novel processes and products or the improvement of existing ones, the question of the role played by patents in the context of benefit-sharing was of paramount importance to countries that could not conduct marine research on their own. In view of the fact that genetic resources and benefit-sharing had been discussed in different forums, including the Convention on Biological Diversity, the World Health Organization (WHO), FAO and the Council for the Trade-Related Aspects of Intellectual Property Rights (TRIPS Council), a question was raised as to how countries that did not have the necessary capabilities could ensure that the TRIPS Agreement and discussions related to oceans could support each other. In that connection, a panellist recalled that the further extension of the transition period under article 66.1 of the TRIPS Agreement for least

developed country members of the World Trade Organization (WTO) was under discussion at the TRIPS Council. Such a transition period could provide an environment under which those countries might develop their own capacity.

43. The patentability of microorganisms in their natural state was discussed. A panellist expressed the view that, pursuant to article 27 of the TRIPS Agreement, only those microorganisms that had been genetically modified would be patentable. An observation was made that, despite several attempts at harmonizing patent laws, patents were regulated differently under different domestic intellectual property law systems and that some jurisdictions allowed for the organisms in their natural state to be patented.

44. The interface between intellectual property law, benefit-sharing and the law of the sea was discussed in the context of the different jurisdictional contexts within which each applied. In that regard, a panellist expressed the view that when the same genetic material was found in multiple national jurisdictions, benefit-sharing took place according to the definition in the Convention on Biological Diversity of "country of origin". With regard to marine genetic resources of areas beyond national jurisdiction, an understanding of what constituted the "country of origin" might be required.

45. The issue of how to allocate responsibility for benefit-sharing between those research institutions which conducted research expeditions in areas beyond national jurisdiction and those which later developed commercial applications on the basis of the results of those expeditions was raised. In that regard, a panellist recalled that while most research cruises were sponsored by States, the results of the research and derivatives might be handled by private enterprises and researchers, and the users of the resources were not necessarily those that had sourced the organism. He suggested that the allocation of benefits could be addressed before the commercialization process in contracts between the research institutions and the entities which subsequently carried out the commercial development, especially when the research institutions were aware that commercialization would ensue. It was acknowledged, however, that that might not always be possible since commercial development by the private sector could be based on the findings of an academic publication without the prior knowledge or agreement of the academic entity.

46. With regard to mapping the origin of marine genetic resources, a panellist indicated that geo-referencing based on species named in patents was useful, although not entirely reliable. It was also noted that studies might be needed to determine whether the State institutions that sponsored research cruises were also those that had filed for the patents. It was further observed that, under the patent laws of certain States, the disclosure of the origin of genetic resources was not required. In that connection, a panellist suggested that adopting a requirement for disclosure would not impose any additional burden on patent authorities since they would not be required to investigate the origin or compliance with benefit-sharing, but simply ensure that the declaration of origin had been made by an applicant. Attention was drawn to the trend towards the requirement by a growing number of developing and developed countries of the identification of the sourcing location in patent applications.

47. It was advanced that the design of any future access and benefit-sharing regime for marine genetic resources of areas beyond national jurisdiction would

need to address the current lack of an obligation, under international law, to disclose the origin of organisms. In that regard, some panellists suggested that a number of checkpoints to determine the geographical origin of marine genetic resources could be placed at various stages, including the stage at which a product was being approved for commercialization or in the context of a material transfer agreement. A panellist also observed that disclosing origin upstream of the commercialization process would be more effective. Another panellist stated that where there were attempts to avoid disclosure, information from taxonomic data could assist in determining the geographical origin of an organism.

F. Panel 6 — Global and regional regimes on genetic resources, experiences and best practices

48. The sixth panel included the following presentations: "Global regimes on genetic resources: the Convention on Biological Diversity and the Nagoya Protocol" by Lyle Glowka, Secretariat of the Convention on Migratory Species of Wild Animals; "Global regimes on genetic resources: the food and agriculture, and health sectors" by Claudio Chiarolla, Institut du développement durable et des relations internationales, Institut d'études politiques de Paris; "Regional regimes on genetic resources, experiences and best practices" by Arianna Broggiato, Biodiversity Governance Unit, Centre for the Philosophy of Law, Catholic University of Louvain, Belgium; and "Scientific data about plankton ecosystems are key for decision-making about high seas governance and monitoring" by Eric Karsenti, European Molecular Biology Laboratory, Germany.

49. In the ensuing discussions, it was noted that the Convention on Biological Diversity and the Nagoya Protocol, while only applicable to genetic resources within national jurisdiction, provided a good starting point to discuss access and benefit-sharing mechanisms for marine genetic resources in areas beyond national jurisdiction. The difficulties in applying the closed-list approach to marine genetic resources in the FAO International Treaty were noted in light of the fact that such resources could potentially include thousands of species, many of which were still to be discovered. In particular, a panellist highlighted as potential challenges the handling of contracts and keeping track of transactions. In that regard, the panellist indicated that the model provided by the WHO Pandemic Influenza Preparedness Framework could be less burdensome than the use of standard material transfer agreements, as provided for in the context of the FAO International Treaty. In situations where it was difficult to conclude access and benefit-sharing agreements, the role of voluntary codes of conducts for scientists, with the aim of fostering the public domain nature of research results, was also highlighted as a form of non-monetary benefit-sharing. Delegations were informed about the progress in the ongoing consultations related to Article 10 of the Nagoya Protocol related to a global multilateral benefit-sharing mechanism.

50. With regard to the applicability of the structure of the FAO International Treaty to marine genetic resources of areas beyond national jurisdiction, a panellist suggested that the institutional structure of that treaty and its recognition of FAO as a third-party beneficiary who could act to enforce treaty rights in cases where the provider of genetic resources did not seek enforcement, could provide useful lessons. Other noted features of the FAO International Treaty were the non-obligatory contribution of material to the multilateral system by private

enterprises and the limitation of the use of the system to the particular type of genetic resources used for food and agriculture, with other uses having to be negotiated on a bilateral basis under the Convention on Biological Diversity.

51. Concerns were reiterated regarding the lack of capacity of developing countries to develop and use marine genetic resources. In that connection, a panellist suggested that the capacity-building provisions of the Convention on Biological Diversity and the Nagoya Protocol could be drawn upon even if they applied more specifically to genetic resources within national jurisdiction. He also indicated that the regime on the transfer of marine technology contained in the United Nations Convention on the Law of the Sea was still a useful reference. Attention was drawn, however, to the limited implementation of Part XIV of the United Nations Convention on the Law of the Sea, and the view expressed that technology transfer should not be tied to intellectual property rights. With regard to the effectiveness of the provisions on technology transfer contained in article 16 of the Convention on Biological Diversity, a panellist noted that since they had either not often been used or studied, the extent of technology transfer to developing countries was difficult to assess. In addition, it was observed that transfer of technology often took place on a bilateral basis and that contracts might not be publicly available. It was further noted that patenting needed to be practised responsibly by ensuring that patents did not exclude others from using the materials. That would allow for more open access to governmental research results by all States, in particular developing countries.

52. A view was expressed that existing regimes were not adequate for marine genetic resources of areas beyond national jurisdiction and to address the concerns of developing countries. It was therefore suggested that solutions should also be sought by considering the provisions of the United Nations Convention on the Law of the Sea. A panellist acknowledged, in that regard, that the Convention embodied notions of equity that could be applied. It was noted that any disagreement that might exist on the legal status of marine genetic resources of areas beyond national jurisdiction under the Convention should not constitute an obstacle to achieving a pragmatic solution to achieve benefit-sharing.

53. The possibility for a future access and benefit-sharing regime for marine genetic resources of areas beyond national jurisdiction to be used for promoting greater conservation was considered. A panellist suggested, in that regard, that the conservation of marine biodiversity beyond areas of national jurisdiction was a benefit to mankind as a whole and should be a component of an access and benefit-sharing regime. He noted, however, that it might be difficult, at least initially, to capture monetary benefits to that end. In that regard, providing fair and equitable access to samples and data was one of the most immediate and promising ways of sharing benefits with humankind as a whole, in light of the current inequities in terms of physical access to areas beyond national jurisdiction and of access to samples and data. Another panellist concurred that one of the most important ways of sharing benefits was to be able to use the resources. The FAO International Treaty had been successful in that regard by unlocking genetic diversity. The feasibility of designing an access and benefit-sharing mechanism that covered both known resources and those to be still discovered was also raised.

G. Panels 7 and 8 — Exchange of information on research programmes regarding marine biodiversity in areas beyond national jurisdiction; International cooperation and coordination; Capacity-building and the transfer of marine technology

54. The seventh and eighth panels were combined into a single panel which included the following presentations: "Exchange of information on marine biodiversity research" by Caroline Bissada-Gooding, Barbados Coastal Zone Management Unit; "Analysis of the scientific cooperation and research projects on the Tara Arctic and Tara Oceans expeditions as an innovative model for international scientific cooperation on marine biodiversity" by André Abreu, Tara Expeditions, France; "Addressing collective marine biotech and bioprospecting challenges: development, coordination and alignment of national, regional and pan-European research strategies and programmes" by Jan-Bart Calewaert, Marine Board, European Science Foundation, France; and "Relevant activities of the International Seabed Authority" by Nii Allotey Odunton, Secretary-General, International Seabed Authority.

55. In the ensuing discussion, the adverse impacts on the marine environment of the lack of a coordinated management approach in areas beyond national jurisdiction were noted with concern, particularly in areas of concentrated activity. The potential cumulative adverse impacts on seamounts resulting from cobalt-crust mining combined with bottom trawling were cited as an example.

56. Regarding the measures which the International Seabed Authority could take to verify the claims of contractors regarding their environmental practices, it was noted that although there would eventually be inspectors for the mining activities carried out by contractors in areas managed by the Authority, such inspectors had not yet been contracted owing to the lack of mining activities to date.

57. The possibility of using information generated by the environmental assessment procedures in the context of the International Seabed Authority to assess the impact of other human activities on marine genetic resources in areas beyond national jurisdiction was raised. In that context, it was noted that, given the state of mining activities, the current knowledge of biodiversity associated with polymetallic sulfides and cobalt-rich ferromanganese crust, as opposed to polymetallic nodules, was extremely limited. It was also noted that the process of collecting data during the exploration phase was ongoing and that only once the information had been collected and analysed would it be possible to identify the type of technology needed for the exploitation phase as well as the impacts of such technology on the marine environment. Moreover, environmental impact assessments would only be required for mineable areas after large-scale testing of mining equipment had begun.

58. Examples of international cooperation and capacity-building projects were discussed. In particular, it was noted that the European Marine Board was composed of various funding and research institutions, the scope of activities and capabilities of which varied significantly. In terms of collaboration, landlocked countries in the European area with an interest or capacity in marine biotechnology research could use the marine stations in coastal States. Some of those institutions engaged in considerable capacity-building as capacity also needed to be built in Europe. The International Seabed Authority Endowment Fund also provided some financing for marine scientific research programmes, including in the Clarion Clipperton Zone, for the benefit of developing States and technologically less developed States.

II. Workshop on conservation and management tools, including area-based management and environmental impact assessments

59. The workshop on conservation and management tools, including areas-based management and environmental impact assessments, held on 6 and 7 May 2013, included eight panels which addressed the list of issues identified in the terms of reference annexed to resolution 67/78, as outlined below.

A. Panel 1 — Key ecosystem functions and processes in areas beyond national jurisdiction

60. The first panel consisted of one presentation entitled "Key ecosystem functions and processes in areas beyond national jurisdiction" by Eulogio Soto Oyarzún, Universidad de Valparaíso, Chile.

61. During the ensuing discussions, knowledge gaps in ecosystem functions and processes were highlighted. These related, for example, to understanding and characterizing ecosystem changes, to evaluating their capacity to produce goods and services and to determining the effects of direct and indirect impacts as well as integrating socioeconomic impacts. It was observed that a connection existed between the loss of marine biodiversity and the loss of ecosystem services. It was also noted that many functions and processes in areas beyond and within national jurisdiction were either similar or closely linked.

62. The panellist further indicated that endemism of chemosynthetic organisms was particularly high in environments such as hydrothermal vents, cold seeps and seamounts. It was also noted that whale carcasses provided a habitat to a high level of endemic species. For example, many chemosynthetic organisms differed from one hydrothermal vent to another. Studies had also found differences between the top and the bottom of vent systems. Reference was made to the symbiotic relationship between many invertebrate species and bacteria and archaea in chemosynthetic environments.

63. A number of activities were highlighted as having impacts on ecosystem functions and processes in areas beyond national jurisdiction, including seabed mining, pollution, the dumping of waste and unregulated harvesting of resources. It was noted that some of those activities in areas beyond national jurisdiction were regulated by international instruments to which most States were parties.

B. Panel 2 — Impacts on and challenges to marine biodiversity beyond areas of national jurisdiction

64. The second panel included the following presentations: "Impacts and challenges of high-seas fisheries to marine biodiversity in areas beyond national jurisdiction" by Edwin Niklitschek, Centro I-Mar, Universidad de Los Lagos, Chile; "Human impacts on fisheries productivity in areas beyond national jurisdiction" by Callum Roberts, University of York, United Kingdom of Great Britain and Northern Ireland; and "Impacts and challenges to marine biodiversity beyond areas of

national jurisdiction" by Jihyun Lee, Secretariat of the Convention on Biological Diversity.

65. During the discussions that followed, particular concern was expressed regarding the impacts of overfishing, climate change and ocean acidification. The view was expressed that fishing was currently the main threat to marine biodiversity in areas beyond national jurisdiction. In particular, concerns were raised with regard to the impacts of bottom fisheries.

66. The need for regional fisheries management organizations to be strengthened was emphasized. It was suggested that that could be achieved by expanding their mandates with a view to applying ecosystem approaches, including biodiversity considerations, conducting performance reviews, sharing best practices and improving their monitoring and surveillance mandate. The need to improve transparency and accountability of regional fisheries management organizations, as recognized in the outcome document of the United Nations Conference on Sustainable Development, "The future we want", was also highlighted. In terms of best practices, some panellists noted that, while the Antarctic Treaty System provided a unique context, lessons could be learned from the experience of the Commission on the Conservation of Antarctic Marine Living Resources, including its application of an ecosystem approach, the use of a common database and information system and 100 per cent observer coverage. The enforcement measures of the North-East Atlantic Fisheries Commission were also cited as an example of best practices.

67. The need for regional fisheries management organizations to consider the impacts of fishing on non-target species, such as migratory species of seabirds and turtles, was also noted, as was the need to address gaps in knowledge of such impacts. At the same time, inherent difficulties in managing a wide range of target and non-target migratory species were highlighted. It was also suggested that regional fisheries management organizations should take into account the impacts of other human activities on fisheries productivity when adopting management measures.

68. Divergent views were expressed on the use of moratoriums on high seas fishing and area closures as a means to improve conservation of marine biodiversity in areas beyond national jurisdiction. Noting the current uncertainty about deep ocean and pelagic biology and processes as well as the relative importance of management measures on these processes, a panellist suggested that the high seas, or regulatory areas of regional fisheries management organizations, should be closed to fishing activities, at least temporarily, until the mandates of those organizations were expanded and/or reformed to be better equipped to manage fisheries. The view was expressed that suspending the work of regional fisheries management organizations or closing the high seas to fishing might have a counter-effect of encouraging unrestrained fishing and illegal, unreported and unregulated fishing in those areas.

69. The work of the General Assembly in addressing the impacts of destructive fishing practices on vulnerable marine ecosystems and ensuring the long-term sustainability of deep-sea fish stocks, in particular pursuant to its resolution 61/105, as well as related developments in FAO and in regional fisheries management organizations, were highlighted. However, as some of the current measures were only temporary and subject to review, further efforts in the implementation of these

commitments was called for, including through the protection of habitats and the establishment of area closures. A panellist also observed that some regional fisheries management organizations had adopted definitions of "vulnerable marine ecosystems" which were more restrictive than what was contemplated in resolution 61/105, with the effect of leaving the majority of vulnerable marine ecosystems without protection.

70. Progress in the work of regional fisheries management organizations was highlighted, including ongoing performance reviews as well as the establishment of area closures and new regional fisheries management organizations. It was emphasized that there was a general trend towards a reduction of fishing effort in the deep sea, in particular in the North-East Atlantic. It was suggested that the decrease was partly due to the fact that deep sea fisheries required larger vessels and more complex gear and was therefore less attractive from an economic perspective. Developments within the International Commission for the Conservation of Atlantic Tunas to reduce catch limits, which had led to improvements in the status of relevant stocks, were also recalled.

71. It was noted that a disaggregated analysis of the performance of regional fisheries management organizations presented an obstacle to identifying which ones had been successful and which had not, and the lessons that could be learned. It was also observed that the success or failure of a regional fisheries management organization depended on the political will or lack thereof of its member States.

72. The impacts of other pressures which were beyond the mandates of regional fisheries management organizations were also recalled, including impacts from shipping, seabed mining, climate change, ocean acidification, ocean noise and land-based sources of pollution.

73. Reservations were expressed about the use of marine protected areas in areas beyond national jurisdiction, noting that a precautionary approach would be preferable. The benefits that marine protected areas would provide to biodiversity conservation, including the prevention of cumulative impacts and the management of user conflicts, were also highlighted. Challenges that could impede the success of marine protected areas were observed. Those challenges included the establishment of such areas in the pelagic realm where species travelled long distances. In that regard, a panellist noted that, in order to provide a useful tool to protect migratory species, marine protected areas would need to be established throughout the range of such species. Noting recent trends towards the establishment of large marine protected areas, another panellist stressed that protected areas needed to be relevant from an ecological and biological perspective rather than necessarily be extensive in size.

74. It was suggested that cross-sectoral integrated management approaches should be developed. In that context, the need to address the accelerating impacts from various pressures as well as manage conflicting uses was highlighted. A panellist suggested putting into place management measures that would address possible future impacts in addition to those already taking place.

75. The Convention on Biological Diversity process on the application of criteria for ecologically or biologically significant marine areas was discussed, including how information on such areas could be used by other bodies in developing management measures. A panellist expressed the view that the naturalness criterion was one of the least useful for the purposes of identifying candidate areas for marine

protected areas. Instead, the criteria of recoverability should be considered. Another panellist noted that the level of information currently available from the Convention process was too limited to adequately assess all the criteria and facilitate the identification of suitable areas.

76. It was emphasized that further progress should be made in the application of the criteria, including through more systematic assessments, improvements in data quality as well as increased scientific research. A panellist noted that most of the data currently available were fisheries-dependent data, and stressed the need for large-scale cross-sectoral initiatives such as the Census of Marine Life to continue gathering the required data. Another panellist observed that close collaboration between the Secretariat of the Convention on Biological Diversity and other bodies, such as FAO, the United Nations Environment Programme (UNEP) and regional fisheries management organizations, had demonstrated the benefits of sharing data and expertise across sectors. The need for collaboration between the ecologically or biologically significant marine areas (EBSA) process and the Regular Process for Global Reporting and Assessment of the State of the Marine Environment, including Socioeconomic Aspects, was highlighted. Capacity-building and increased political awareness were also considered essential.

C. Panel 3 — New and emerging uses of and experimental activities in areas beyond national jurisdiction

77. The third panel included the following presentations: "Overview of new and emerging uses of the ocean areas beyond national jurisdiction" by Takehiro Nakamura, United Nations Environment Programme; and "Trends in new and emerging uses of, and experimental activities in, areas beyond national jurisdiction and implications for the conservation and sustainable use of marine biodiversity beyond areas of national jurisdiction" by Duncan Currie, Globelaw, New Zealand.

78. During the ensuing discussions, the following new and emerging uses of and experimental activities in areas beyond national jurisdiction, along with issues of particular concern, were highlighted: climate engineering, which was described as potentially having the most significant effect; ocean fertilization, which had the potential to affect large areas; marine debris and the presence of microplastics in the oceans, in view of the lack of technology to remove them; increasing demand for aquaculture, which could develop in areas beyond national jurisdiction with the development of mobile cages; and underwater noise.

79. It was observed that, at present, new and emerging uses and experimental activities were carried out primarily within areas of national jurisdiction since the relevant technologies had not been fully developed for use in areas beyond national jurisdiction and the cost for such development had been prohibitive. The possibility that the new and emerging uses and experimental activities would conflict with existing uses of areas beyond national jurisdiction such as fishing, seabed mining and the laying of submarine cables was also mentioned.

80. The need for assessments of the impacts of new and emerging uses and of experimental activities on marine biodiversity in areas beyond national jurisdiction, including cross-sectoral environmental impact assessments, was emphasized. A number of considerations were raised with regard to cross-sectoral environmental impact assessments such as the identification of the entity that would carry out the

assessments as well as the body to which the results of such assessments would be reported. It was also noted that, even where there had been assessments, they had not been comprehensive.

81. The panellists also stressed the importance of sharing information and data regarding the impacts of new and emerging uses of and experimental activities in areas beyond national jurisdiction.

82. Discussions addressed the relevant legal framework and enforcement mechanisms for new and emerging uses of and experimental activities in areas beyond national jurisdiction. The overarching importance of the United Nations Convention on the Law of the Sea in the governance of all uses of the oceans and their resources, including new and emerging uses of and experimental activities in areas beyond national jurisdiction, was emphasized. The role of the 1972 Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter ("the London Convention") and its 1996 Protocol in implementing certain provisions of the United Nations Convention on the Law of the Sea was also stressed. In that regard, a panellist observed that some of the new and emerging uses and experimental activities might already be covered by existing instruments.

83. With regard to regulatory instruments to address ocean noise and whether such pollution in areas beyond national jurisdiction was sufficiently covered by existing instruments, a panellist noted that several sectoral bodies addressed noise pollution in the marine environment. In that regard, attention was drawn to the relevant work of the Convention on Migratory Species of Wild Animals and the recommendations in the context of the Convention on Biological Diversity on assessments of noise pollution. Another panellist, however, noted that there might be a gap concerning the assessment of potential impacts of seismic testing. Concerning noise pollution from seabed mining in areas beyond national jurisdiction, a panellist suggested that the relevant management measures could possibly fall within the competence of the International Seabed Authority.

84. With regard to ocean fertilization, a panellist stressed that experimental activities should be designed so that the impacts of such activities on marine and coastal ecosystems could be measured. Another panellist suggested that there might be a gap in the governance of climate-related geoengineering. In that context, the work in the context of the Convention on Biological Diversity to analyse the regulatory framework for climate-related geoengineering relevant to the Convention was noted.

85. Issues related to responsibility for controlling and regulating new and emerging uses and experimental activities which could have negative impacts in areas beyond national jurisdiction were raised. The importance of establishing the responsibility of States for activities in areas beyond national jurisdiction was emphasized. It was noted that that was not always possible, particularly in relation to unlawful or unregulated ("rogue") experiments. Attention was drawn to the responsibility of flag States in areas beyond national jurisdiction or of States within whose jurisdiction activities took place which could have negative impacts in areas beyond national jurisdiction. It was also noted that the identification of the responsible flag State could be complicated by cases where there had been reflagging or when flags of convenience had been used. The importance of providing compensation when articles of the United Nations Convention on the Law of the Sea had been infringed was also raised.

D. Panel 4 — Types of area-based management tools

86. The fourth panel included the following presentations: "Area-based management tools" by Erik Jaap Molenaar, Utrecht University, the Netherlands and the University of Tromsø, Norway; and "Fisheries and spatial management measures in areas beyond national jurisdiction" by Jessica Sanders, FAO.

87. In the ensuing discussions, the central role of the United Nations Convention on the Law of the Sea and the United Nations Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks ("the United Nations Fish Stocks Agreement") in defining the rights and duties of States in taking measures for the management of marine resources and the protection and preservation of the marine environment was reiterated.

88. The role of regional organizations and initiatives in taking measures in areas beyond national jurisdiction was discussed. The experience and lessons learned in the context of the 1992 Convention for the Protection of the Marine Environment of the North-East Atlantic ("the OSPAR Convention"), in particular concerning the cross-sectoral approach to the establishment of marine protected areas in areas beyond national jurisdiction, were highlighted. It was noted, in that regard, that the process within the OSPAR Convention was an attempt by its Contracting Parties to implement their obligations under the United Nations Convention on the Law of the Sea and that non-Contracting Parties were not bound by the measures adopted in that context. It was also observed that the process focused on achieving an objective and provided a framework for cooperation to that end. The adoption of the measures necessary to achieve that objective was a matter for the competent sectoral organizations. A panellist observed that the experience of the OSPAR Convention had been one of trial and error from which lessons could be learned. He further noted that the only good example of the establishment of an integrated area-based management tool could be found in the context of the Convention on the Conservation of Antarctic Marine Living Resources. The process to establish specially protected areas in the context of the Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean ("the Barcelona Convention") was also highlighted.

89. Concern was expressed about using the experience of the OSPAR Convention as a model. In particular, the view was expressed that the OSPAR Convention and other regional seas conventions did not have the competence under the United Nations Convention on the Law of the Sea, nor the legitimacy, to take measures in areas beyond national jurisdiction such as the establishment of marine protected areas. In that context, the exclusive competency of the International Seabed Authority in the Area was stressed. The view was also expressed that the concerns about the OSPAR Convention example of cross-sectoral cooperation did not provide a sufficient basis for the conclusion that an implementing agreement to the United Nations Convention on the Law of the Sea was needed. It was observed that the fact that discussions among States were ongoing regarding the need for a legal regime for the conservation and sustainable use of marine biodiversity beyond areas of national jurisdiction attested to the concerns of many States over regional or cross-sectoral approaches and initiatives.

90. A panellist suggested that an implementing agreement to the United Nations Convention on the Law of the Sea could be drafted so as to legally bind non-parties to regional organizations by the measures adopted by those organizations. Thus, there would be an obligation at the global level to comply with the decisions of regional bodies.

91. It was noted that substantial progress had been made by regional fisheries management organizations/arrangements in managing fisheries in an ecosystem context, with a view to addressing the impacts of fishing on marine biodiversity beyond areas of national jurisdiction. However, it was recognized that subsidies and overcapacity still caused major problems and further work was needed in that regard. While the lack of political will within regional fisheries management organizations/arrangements was generally recognized as an issue to be addressed, it was observed that the level of political will differed in various regions, as did the measures adopted to conserve and sustainably use marine resources. In that regard, the suggestion was made that there must be substantive reasons why the developments within the OSPAR Convention area were not replicated in other regions. It was observed that other factors, such as the financial situation of a particular region or State, could also act as impediments to the development of adequate management measures. A panellist observed, however, that the lack of regional agreement or action in a particular region should not prevent appropriate management measures from being taken. In that regard, it was suggested that if a conclusion were reached at the global level that some protective measures were required but no action was taken at the regional level, such measures should be adopted at the global level.

92. Concern was expressed over the possible restriction on the freedom of navigation resulting from the establishment of marine protected areas or area closures in areas beyond national jurisdiction. However, it was pointed out that the establishment of such areas did not necessarily entail the prohibition of all human activities in those areas. The suggestion was also made that regional organizations having established such areas could, while allowing entry into the areas for navigation purposes, require non-parties to report entry into, and exits from, those areas.

93. It was recognized that some intergovernmental organizations, such as the International Maritime Organization (IMO), might have the capacity and ability to take into account a multitude of activities other than shipping when designing their area-based management tools, including with a view to addressing the impacts of various uses on shipping. A panellist expressed the view that other international organizations could have similar capabilities and abilities, as those varied depending on the organization.

94. It was noted that some recent global initiatives related to oceans, including in relation to areas beyond national jurisdiction, needed to be more transparent and take better account of the interests of, and the need for involvement by, developing countries. Concern was also expressed regarding investments in those initiatives while there was no universal regime for addressing the conservation and sustainable use of marine biodiversity in areas beyond national jurisdiction.

E. Panel 5 — Assessments of sectoral and cumulative impacts

95. The fifth panel included the following presentations: "Environmental impact assessments, strategic environmental assessments and biodiversity in areas beyond national jurisdiction — Current arrangements" by Jake Rice, Fisheries and Oceans Canada; and "Gaps and options in the assessment of impacts on marine biodiversity in areas beyond national jurisdiction" by Miguel Fortes, Marine Sciences Institute, University of the Philippines.

96. In the ensuing discussions, the extent to which environmental impact assessments were already being conducted in areas beyond national jurisdiction was considered. By way of example, it was observed that the International Seabed Authority, in keeping with its mandate, required environmental impact assessments as a pre-condition for mining activities. Similarly, for deep sea fisheries, General Assembly resolution 61/105 required assessments of the impacts of destructive fishing practices on vulnerable marine ecosystems. In that regard, a panellist noted that, as of 2011, all regional fisheries management organizations/arrangements had completed or almost completed evaluations of the implementation of the resolution. However, the process of implementation was incomplete and difficult to assess given that, in some cases, there were management or institutional failures in some regional fisheries management organizations/arrangements. It was further observed that IMO had developed guidance for conducting impact assessments and that the London Convention and Protocol also required such assessments. However, a view was expressed that the assessments required under resolution 61/105 and under IMO instruments were not consistent. There was also variability in the quality of the assessments carried out and the biggest challenge was the ability to assess activities jointly in a coordinated manner.

97. Different views were expressed regarding the relative difficulty of conducting assessments of sectoral and cumulative impacts in areas beyond national jurisdiction. A panellist noted that, in those areas, for any given site, there were likely fewer pressures than at a similar site in coastal areas, but that assessing cumulative impacts might still be challenging because of the interplay between different types of impacts. Another view was expressed that since there were fewer activities in areas beyond national jurisdiction, it might be easier and less costly to undertake such assessments there rather than in coastal areas. A panellist acknowledged that, in the short term, that encouraged greater confidence in sector-specific environmental impact assessments and strategic environmental assessments, adding, however, that the goal had to be to address the aggregate impacts of human activities.

98. A view was expressed that, since the main activity having negative impacts on marine biodiversity in areas beyond national jurisdiction was fisheries, it might be possible for regional fisheries management organizations to undertake cumulative impact assessments in those areas, taking into account other impacts by using a precautionary approach.

99. The panellists observed that while some States currently had insufficient capacity to undertake such assessments, that should not prevent the adoption of the required measures and engaging in a learning-by-doing process through a staged approach. However, it was noted that that could increase the burden and costs of the process for those wanting to undertake activities. The issue of whether there was

sufficient capacity to independently verify environmental impact assessments conducted in areas beyond national jurisdiction was also raised. In that regard, a panellist observed that verification capacity remained limited.

100. Regarding the trigger point for requiring environmental impact assessments, a panellist expressed the view that, on the basis of the available scientific knowledge, it was already possible to determine such trigger points. However, for areas beyond national jurisdiction there were uncertainties which did not exist for assessments on land. In that regard, attention had to be given to the evaluation of trade-offs between overly permissive and overly restrictive regulations.

101. It was suggested that the experiences accumulated in assessing areas within national jurisdiction could be considered for areas beyond national jurisdiction. In that regard, it was noted that lessons could be learned from the application of marine spatial planning in near-shore areas.

102. With regard to governance, a panellist expressed the view that although arrangements generally existed to carry out the necessary assessments at the sectoral level, it was difficult to assess whether an overarching framework was needed. The important role of General Assembly resolution 61/105 in addressing and strengthening the deep sea fisheries regime was highlighted, in spite of its being a non-legally binding instrument. A view was expressed that the effective functioning of a soft-law arrangement such as resolution 61/105 did not prevent the adoption of a binding instrument to govern the conservation and sustainable use of marine biodiversity beyond areas of national jurisdiction. It was suggested, in that regard, that the deep sea fisheries regime might have been stronger if a binding instrument had been concluded. Another view was expressed that some legally binding instruments were not adequately implemented or had not gained sufficient participation and that increasing awareness of issues and political will, regardless of the nature of the instrument or mechanism employed, was more important. The question was raised whether national regulations would have to be made compatible with international approaches.

103. A panellist observed that whether a new overarching instrument was adopted or not, it would be crucial to have a global understanding of who the relevant stakeholders were in areas beyond national jurisdiction, as well as to consider whether new arrangements would make accountability and compliance better.

F. Panel 6 — Technological, environmental, social and economic aspects

104. The sixth panel included the following presentations: "Social and environmental considerations for management in areas beyond national jurisdiction" by Angelique Brathwaite, Barbados Coastal Zone Management Unit; and "Scientific expertise and infrastructure for marine biodiversity management" by Alf Håkon Hoel, Norwegian Institute of Marine Research.

105. During the discussions that followed, consideration was given to whether the process for identifying stakeholders for the management of areas beyond national jurisdiction could follow the approach applied for areas within national jurisdiction. In that regard, a panellist noted that a similar approach might be used to identify stakeholders, but that the outcome would necessarily be different. Information from intergovernmental organizations could also be used to supplement the list of

stakeholders beyond the known ones, such as fishers and bioprospectors. The Caribbean Large Marine Ecosystem project was cited as an example of engagement of a wide range of stakeholders, including regional fisheries management organizations and other regional organizations, UNEP and academic institutions.

106. Attention was also given to the Nansen project, an initiative of FAO to support the implementation of the ecosystem approach in the management of marine fisheries. The initiative also aimed at assisting developing countries in gathering information and data for that purpose. It was explained that the project included scientific research as well as policy components and was active in various States around the world.

G. Panel 7 — Existing regimes, experiences and best practices

107. The seventh panel included the following presentations: "Existing regimes, experiences and best practices" by Kristina Gjerde, Global Marine and Polar Programme, International Union for Conservation of Nature, Switzerland; and "Ecosystem services and area-based management" by Nobuyuki Yagi, University of Tokyo.

108. In the ensuing discussions, the need to achieve the goal set out in the context of the Convention on Biological Diversity to establish representative networks of marine protected areas by 2020 was underlined. Particular attention was drawn to the benefits of linking that goal with other efforts to address impacts on the marine environment and the provision of ecosystem services.

109. A panellist suggested that large areas were needed to support ecosystem processes in the open oceans given that those processes worked on a far greater scale. The potential role of bioregionalization was raised in that regard. With regard to challenges in creating marine protected areas for pelagic species, the panellists suggested that, given the migratory nature of those species, consideration should be given to the creation of mobile marine protected areas. A panellist also noted that marine protected areas could not be sufficient on their own if measures to address the impacts of activities taking place outside of the areas but which could affect the ecological integrity of the areas were not also adopted.

110. Reference was made to efforts to create marine protected areas in areas beyond national jurisdiction, including in the context of the OSPAR Convention and the Commission on the Conservation of Antarctic Marine Living Resources and it was suggested that they could be used as models for other areas. A panellist noted, however, that those measures dealt only with certain activities and did not address cumulative effects. The panellist also observed that existing experiences were limited to developed countries, and there would be merit in considering other models for other regions where different circumstances prevailed. In that regard, the need to build regional capacity, including for monitoring and the conduct of impact assessments, was stressed.

111. A panellist noted that biodiversity considerations were not taken into account by all regional fisheries management organizations, in particular tuna organizations, in the adoption of management measures. In that context, it was observed that even sustainable fisheries would have impacts on the marine environment and lead to changes in marine ecosystems and life cycles. In that connection, attention was

drawn to the need to establish some marine protected areas where fisheries activities were not permitted. The view was expressed that tuna fisheries did not physically impact the seabed. It was also noted that progress was being made in regional fisheries management organizations to take ecosystem considerations into account.

112. The difference between the Convention on Biological Diversity criteria for ecologically or biologically significant marine areas and those for vulnerable marine ecosystems was discussed. It was stressed that the EBSA process aimed at providing scientific information to enhance protection of specific areas, but did not have consequences in terms of policy or management. In that regard, it was observed that whether an ecologically or biologically significant marine area should be the basis for a marine protected area depended on whether an activity was causing damage to that area. A panellist also drew attention to the fact that an ecologically or biologically significant marine area could be protected by tools other than a marine protected area. Conversely, it was recalled that the identification of a vulnerable marine ecosystem had consequences in terms of policy and management. It was suggested that, for that reason, policymakers might be reluctant to recognize the science underpinning the identification of vulnerable marine ecosystems.

113. A panellist noted that both the ESBA and vulnerable marine ecosystem processes were informed by the best available science and that the EBSA process could play a part in the selection of vulnerable marine ecosystems. In that connection, it was observed that benefits could be gained from the input of science across sectors, through a bottom-up contribution, as that would reduce duplication in research efforts and enhance coordination among policymaking processes.

114. Challenges in monitoring activities conducted in areas beyond national jurisdiction were discussed. In that context, attention was drawn to the need to identify stakeholders, which were often resource users, in order to foster coordination and cooperation among them. That would assist monitoring in areas beyond national jurisdiction and would also create an incentive for compliance with regulations and thus overcome issues linked to lack of political will.

115. The potential conflicting uses of areas beyond national jurisdiction, such as bottom fishing activities and seabed mining, were noted and the need for coordination among competent bodies highlighted. In that context, reference was made to the establishment, in the Pacific Ocean, of new regional fisheries management organizations which had a mandate to take into account activities other than fisheries. An understanding was expressed that any measures adopted by regional fisheries management organizations or regional environmental organizations in that regard would be without prejudice to the work of the International Seabed Authority, which had the mandate for mining activities in the Area.

116. Discussions also addressed the role of cross-sectoral coordination and whether lack of cross-sectoral coordination between organizations presented an obstacle to achieving the goals set by States. In that context, the need to address all activities impacting marine biodiversity in areas beyond national jurisdiction, as well as issues of competing jurisdictions and uses and cumulative effects of current and future activities, was discussed. Coordinating the implementation of measures at the sectoral and regional levels was emphasized. It was observed that the process was not one of competition but rather of complementarities and coordination between various competent organizations.

117. Challenges in achieving cross-sectoral coordination to conserve and sustainably use marine biodiversity in areas beyond national jurisdiction without an overarching legally binding mandate and framework setting out goals and purposes were highlighted. The need for an instrument that would provide for integrated marine protected areas in areas beyond national jurisdiction was expressed. It was observed that, under the current legal regime, interested States were able to establish a regional organization to coordinate sectoral activities. While that did not impose obligations on third States, a panellist alluded to the possibility of building into a regional mechanism an undertaking for third parties to not undermine the objectives of the measures adopted by that mechanism. The example of the specially protected areas of Mediterranean importance process was highlighted in that regard.

118. It was suggested that further efforts were needed to improve coordination among stakeholders and to achieve a cross-sectoral approach to management. With reference to the example of the Sargasso Sea initiative, a panellist observed that meetings of relevant bodies often occurred at the same time, making it difficult to coordinate policy discussions. It was also noted that coordinating activities in the United Nations system and at the sectoral level was an ongoing challenge.

119. Possible ways forward, including the development of new mechanisms and the expansion of mandates of existing bodies, were raised. In that regard, it was noted that a new global mechanism could provide international support for areas in need of protection and be complemented by measures adopted at the regional level. A panellist also suggested an approach that would combine areas with greater protection with areas within which a rational management of allowed activities could take place. In that context, the issue of the instruments that could be the most efficient in achieving an appropriate management of marine protected areas beyond areas of national jurisdiction was raised. In that regard, it was considered doubtful that memorandums of understanding would constitute the best mechanism.

H. Panel 8 — Exchange of information on research programmes regarding marine biodiversity in areas beyond national jurisdiction; International cooperation and coordination; Capacity-building and the transfer of marine technology

120. The last panel included the following presentations: "Trends in cooperation for research, management and capacity-building activities in ocean areas beyond national jurisdiction" by Martin Tsamenyi, Australian National Centre for Ocean Resources and Security, University of Wollongong; and "Ocean Biogeographic Information System (OBIS) and capacity-building needs for marine biodiversity data management" by Pat Halpin, Duke University, United States of America.

121. During the discussions that followed, the interconnectedness of areas within and beyond national jurisdiction was examined in relation to the spatial distribution of data. In that regard, a panellist noted that the available data did not follow the legal boundaries of maritime zones and therefore data had to be assessed in a broad context. In addition, it was observed that there was no centralized data repository for the results of research in areas beyond national jurisdiction. A panellist noted that, while several types of data were often available, such availability was not well advertised outside developed countries, and there should be greater efforts to make use of, and optimize, existing data infrastructure.

122. It was suggested that attention should be given to the compatibility of measures for areas within and beyond national jurisdiction, recognizing that such compatibility was a two-way process. Reference was made to obligations in international instruments that supported or provided for such compatibility, in particular the United Nations Fish Stocks Agreement. A panellist provided examples of efforts to ensure compatibility of measures, including the Pacific Oceanscape and the High Seas Pockets Special Management Areas of the Western and Central Pacific Fisheries Commission. The panellist also observed that compatibility did not mean the adoption of the same measures but that measures should have equivalent effect. For instance, the fact that a marine protected area existed within national jurisdiction did not necessarily mean that there should be such a protected area in the contiguous area beyond national jurisdiction.

123. The need for further scientific research in areas beyond national jurisdiction to fill data gaps was also discussed and reference was made to the resolutions of the General Assembly recalling the importance of marine science. In that regard, examples were provided of international collaborative marine scientific research projects, such as the Census of Marine Life.

124. It was also observed that South-South cooperation for marine scientific research was limited and that progress was mostly in developed regions. As a result, the need to increase South-South cooperation was emphasized, including in relation to marine genetic resources.

125. The need for capacity-building in both developed and developing countries for marine science in areas beyond national jurisdiction was also emphasized. Funding for projects in areas beyond national jurisdiction under the Global Environment Facility was discussed.

126. In light of the limited implementation of Part XIV of the United Nations Convention on the Law of the Sea on the development and transfer of marine technology, consideration was given to the difficulties in achieving technology transfer. A panellist observed that technology transfer could take different forms, including provision of software or data access.

127. In light of the fact that several research initiatives were independent, the need for global mechanisms for technology transfer and data-sharing was highlighted, as was the need to protect commercially confidential data and address data access, including through data protocols. A panellist suggested that the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services could have a role in data- and information-sharing. The role of the clearing house mechanism under the Intergovernmental Oceanographic Commission of the United Nations Educational, Scientific and Cultural Organization (UNESCO) was considered a more appropriate option. The suggestion was made that the establishment of a mechanism for sharing of marine scientific research data should be included in the post-2015 development agenda.

128. It was also observed that direct participation in joint research projects was more effective, in terms of building capacity, than information-sharing. The panellists also referred to increased cooperation between regional institutions, regional training programmes and workshops, mentoring, partnerships, linkages between regional institutions in both North and South and global scholarships as beneficial. In that regard, a panellist stressed that capacity-building should not be considered as a single activity but as a complex series of interrelated activities. The need to ensure sustainable capacity-building activities was highlighted.

Annex

Format and organization of work for the intersessional workshops aimed at improving understanding of the issues and clarifying key questions as an input to the work of the Working Group in accordance with the terms of reference annexed to General Assembly resolution 67/78 (New York, 2-3 and 6-7 May 2013)

I. Introduction

1. The General Assembly, in its resolution 67/78, requested the Secretary-General to convene, within existing resources, two 2-day intersessional workshops with a view to improving understanding of the issues related to the conservation and sustainable use of marine biodiversity in areas beyond national jurisdiction and clarifying key questions as an input to the work of the Ad Hoc Open-ended Informal Working Group to study issues relating to the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction ("the Working Group"), which will meet in New York from 19 to 23 August 2013. Pursuant to paragraph 182 of resolution 67/78, the two intersessional workshops will take place on 2 and 3 May and on 6 and 7 May 2013, respectively in accordance with the modalities set out in the terms of reference annexed to the resolution.

2. As reflected in the terms of reference, there will be two 2-day workshops that will address the identified topics for the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction, namely marine genetic resources (2-3 May 2013) and conservation and management tools, including area-based management and environmental impact assessments (6-7 May 2013). The workshops will also consider issues related to international cooperation, as well as capacity-building and the transfer of marine technology.

3. The Co-Chairs of the Working Group, Ambassador Palitha T. B. Kohona, Permanent Representative of Sri Lanka to the United Nations, and Liesbeth Lijnzaad, Legal Adviser, Ministry of Foreign Affairs of the Netherlands, who were appointed by the President of the sixty-seventh session of the General Assembly in consultation with Member States and taking into account the need for representation from developed and developing countries, have prepared the present draft format and organization of work. The document builds on the terms of reference annexed to General Assembly resolution 67/78 and on the concept paper which was presented to Member States at an informal briefing held in New York on 15 November 2012.

II. Methods of work

4. The intersessional workshops will be presided over by the Co-Chairs.

5. The workshops will be held in Conference Room 3 in the North Lawn Building at United Nations Headquarters. The workshops will be conducted in English. Interpretation into the other official languages of the United Nations will be provided only on an "as available" basis.

6. The workshops will comprise a series of panels, including presentations and general discussions. Individual presentations will be limited to 15 minutes and will aim at providing a factual overview of the topics identified in paragraph 8 of the terms of reference annexed to General Assembly resolution 67/78. It is suggested that, whenever possible, a flexible time allocation will be provided to each panel to allow for an interactive discussion and to take into account that some panels may include fewer speakers than others. In this regard, it is proposed that the panels should not comprise less than two presentations, so as to ensure a balanced and diverse presentation of the topics.

III. Output

7. Pursuant to paragraph 9 of the terms of reference, the output of the workshops will consist of a summary of proceedings prepared by the Co-Chairs for transmittal as an input to the work of the Working Group. The summary will reflect key elements of the presentations by experts and of the interactive discussions among participants.

8. In accordance with paragraph 10 of the terms of reference, the summary of proceedings, presentations and additional materials provided by the experts will be posted on the website of the Division for Ocean Affairs and the Law of the Sea.

IV. Organization of work

9. Following consultations with Member States, the Co-Chairs have organized the workshops in panels as set out below. Under each panel, presentations will be followed by discussions between and among delegations and panellists. The panels listed below are intended to provide a forum for exploring any relevant aspect of the panel topics in greater depth and specificity, without presupposing any outcomes of the deliberations of, and without reiterating discussions in, the Working Group. Issues and questions, as proposed by the Co-Chairs, are listed for each panel as non-exhaustive illustrations of the types of issues that participants may seek to discuss during each panel, as those issues relate specifically to marine genetic resources from areas beyond national jurisdiction, on the one hand, and conservation and management tools in areas beyond national jurisdiction, on the other hand. It is understood that questions relating to existing legal frameworks, including the United Nations Convention on the Law of the Sea, that could be raised would provide a factual understanding of the instruments that may be relevant as an important part of the information-gathering exercise of the workshops.

Workshop 1 — Marine genetic resources (2-3 May 2013)

2 May, morning

Panel 1 — Meaning and scope; extent and types of research, uses and applications (10-11.30 a.m.)

(a) Meaning and scope

10. Under this theme, it is proposed that questions under consideration may include: What is understood by the term "marine genetic resources"? What is the

relationship between "marine genetic resources", "biological resources" and "genetic material"? What are derivatives and products? What implications does a specific meaning or scope have? Is there a distinction between marine genetic resources from areas within national jurisdiction and from areas beyond national jurisdiction from a scientific and practical point of view? How do endemism, migration and colonization impact the meaning and scope?

(b) *Extent and types of research, uses and applications*

11. Under this theme, it is proposed that questions under consideration may include: What are the different sectors that utilize marine genetic resources? What is the extent to which marine genetic resources from areas beyond national jurisdiction are used by various sectors? What is the main form of utilization of marine genetic resources or information about those resources (e.g., in situ, *ex situ* or *in silico*) by sector? For each form of utilization, how much raw material is required? Which organisms are used by various sectors? What are the different arrangements in place for the undertaking of research on, and uses of, marine genetic resources beyond areas of national jurisdiction (e.g., consortia of research institutions; "mixed" consortia comprising research institutions and private enterprises; single research institutions; or single private enterprises)? What is the main source of funding for research on marine genetic resources beyond areas of national jurisdiction? What are the different steps in research, utilization and application? What is the importance of each step in adding value to the process? What is the probability of commercial application? What is the relationship between marine scientific research and commercial exploitation following the identification of a promising lead?

Panel 2 — Impacts and challenges to marine biodiversity beyond areas of national jurisdiction (11.30 a.m.-1 p.m.)

12. It is proposed that this panel focus on impacts and challenges related to marine genetic resources. In particular, questions under consideration may include: What activities impact marine genetic resources beyond areas of national jurisdiction, and what are the specific impacts? What is the function of marine genetic resources in the marine ecosystem? Why is it important to preserve genetic diversity? How is genetic diversity impacted? Who are the stakeholders and what methods have been most successful in identifying and mobilizing relevant stakeholders? What tools are available to preserve genetic diversity and prevent genetic erosion? What are the challenges in implementing these tools?

2 May, afternoon

Panel 3 — Technological, environmental, social and economic aspects (3-4.30 p.m.)

13. Under this theme, it is proposed that questions under consideration may include: What infrastructure, technologies and type of expertise are needed to access and use marine genetic resources from areas beyond national jurisdiction? What are the potential environmental impacts of activities related to marine genetic resources? Do environmental impacts differ based on the target organisms and/or location? Are environmental impact assessments currently implemented? What are the social benefits of research, uses and applications of marine genetic resources of areas beyond national jurisdiction? What are the costs incurred and the revenues generated from activities related to marine genetic resources of areas beyond national jurisdiction?

Panel 4 — Access-related issues; Types of benefits and benefit-sharing (4.30-6 p.m.)

(a) Access-related issues

14. Under this theme, it is proposed that questions under consideration may include: What are the different types of access to marine genetic resources and to information about those resources (e.g., samples for in situ and *ex situ* access, data for *in silico* access)? What are the challenges and opportunities of each type of access? Does this vary based on the different types of access? Can access *ex situ* and *in silico* be considered as part of benefit-sharing? How are data handled? Is standardization of data possible to facilitate access? How many and which entities currently access marine genetic resources of areas beyond national jurisdiction? How is access addressed in different maritime areas? What sources of information are available regarding current activities in situ? How can access be monitored?

(b) Types of benefits and benefit-sharing

15. Under this theme, it is proposed that questions under consideration may include: What are the types of monetary and non-monetary benefits? To what extent is benefit-sharing taking place at a global, regional and national level? What are the existing and potential benefit-sharing mechanisms? What are their advantages and disadvantages (e.g., potential impacts on research)? How can they be adjusted to the specific case of marine genetic resources of areas beyond national jurisdiction? Can the origin/provenance of genetic resources be tracked, and how? Is there a role for disclosure of origin? How is disclosure of origin achieved with regard to marine organisms?

3 May, morning

Panel 5 — Intellectual property rights issues (10-11.30 a.m.)

16. Under this theme, it is proposed that questions under consideration may include: What are the main intellectual property rights tools used in relation to inventions based on marine genetic resources from areas beyond national jurisdiction? What are the main trends relating to patenting (e.g., upstream or downstream patents, use of exceptions and exemptions) relating to inventions based on marine genetic resources from areas beyond national jurisdiction and copyrights relating to published material (e.g., databases) on marine genetic resources? How are patent criteria applied at the national level? What are geographic indications? What are open source approaches? How can the origin/provenance of genetic resources from areas beyond national jurisdiction be tracked? What is disclosure of origin? Can disclosure of origin be added to good practice of the research community in relation to marine genetic resources from areas beyond national jurisdiction? What is the experience in application of intellectual property rights with regard to marine organisms and what are its implications?

Panel 6 — Global and regional regimes on genetic resources, experiences and best practices (11.30 a.m.-1 p.m.)

17. Under this theme, it is proposed that questions under consideration may include: Which regimes, experiences and best practices related to genetic resources are in place? What are their principles and main characteristics? What lessons can be learned from existing regimes, experiences and practices?

3 May, afternoon

Panel 7 — Exchange of information on research programmes regarding marine biodiversity in areas beyond national jurisdiction (3-4.30 p.m.)

18. Under this theme, it is proposed that questions under consideration may include: What practices exist with regard to exchange of information on research programmes? To what extent are the results of scientific research disseminated? Are there mechanisms in place to share information on research results relating to marine genetic resources? What are the modalities of those mechanisms (e.g., is information exchange restricted or free)? What policies and initiatives exist to promote such exchange of information? What are the challenges in exchanging information? How could exchange of information be enhanced?

Panel 8 — International cooperation and coordination; Capacity-building and the transfer of marine technology (4.30-6 p.m.)

(a) International cooperation and coordination

19. Under this theme, it is proposed that questions under consideration may include: What is the practice in relation to cooperation and coordination? What are the current means of cooperation and coordination? What is the nature of the arrangements currently in place for the undertaking of research on marine genetic resources from areas beyond national jurisdiction (e.g., global, regional or national; public or private or public-private)? How can cooperation be effected for material found in areas both within and beyond national jurisdiction? What is the level of cooperation between institutions from developed and developing countries? What are the challenges in the effective participation in activities related to marine genetic resources of areas beyond national jurisdiction? What are the respective roles of North-South and South-South cooperation? What is the role of different stakeholders in the promotion of information-exchange and research?

(b) Capacity-building and the transfer of marine technology

20. What are the capacity needs for access to, and use of, marine genetic resources of areas beyond national jurisdiction? What are the different levels of capacities among States? What are the various forms of capacity-building? What is the nature of the arrangements currently in place for the transfer of marine technology? What are the challenges to effective cooperation and coordination and transfer of marine technology? What mechanisms may be implemented to address those challenges?

Workshop 2 — Conservation and management tools, including area-based management and environmental impact assessments (6-7 May 2013)

6 May, morning

Panel 1 — Key ecosystem functions and processes in areas beyond national jurisdiction (10-11.30 a.m.)

21. Under this theme, it is proposed that questions under consideration may include: What ecosystem functions and processes exist in areas beyond national jurisdiction? Among these, what are key functions and processes? Are they unique and how do they differ from those ecosystem functions and processes in areas within national jurisdiction? Do ecosystem functions and processes have a regional

or a global scale? Are there linkages or interactions between the ecosystem functions and processes in areas beyond national jurisdiction and within areas of national jurisdiction? Are there significant differences between ecosystem functions and processes on the seabed and those in the water column? How do they interact? What are the gaps in our knowledge of these ecosystem functions and processes?

Panel 2 — Impacts and challenges to marine biodiversity beyond areas of national jurisdiction (11.30 a.m.-1 p.m.)

22. Under this theme, it is proposed that questions under consideration may include: Which human activities currently taking place in areas beyond national jurisdiction may impact marine biodiversity? What are the impacts of these human activities? What are the gaps in our knowledge of the impacts? Can the extent of impacts be predicted? Do the impacts have a regional or a global scale? Where do they originate from (e.g., seaborne or land-based)? Do they vary in time? Can the impacts originating within national jurisdiction be confined to prevent their spreading to areas beyond national jurisdiction? Do areas beyond national jurisdiction present unique factors of vulnerability or resilience? What are the challenges in monitoring, predicting and mitigating the impacts? How are those impacts addressed in practice? How do these impacts interact? Are these impacts irreversible? Can these impacts be quantified in financial terms? Are there viable alternatives to the activities that create adverse impacts? Are there positive impacts that can offset, reverse or mitigate the negative impacts? Are there potential user conflicts in areas beyond national jurisdiction and how are they addressed in practice? What methods have been most successful in identifying and mobilizing relevant stakeholders?

6 May, afternoon

Panel 3 — New and emerging uses of and experimental activities in areas beyond national jurisdiction (3-4.30 p.m.)

23. Under this theme, it is proposed that an overview of new and emerging uses of and experimental activities in areas beyond national jurisdiction be presented with a view to understanding trends and implications for the conservation and sustainable use of marine biodiversity beyond areas of national jurisdiction.

Panel 4 — Types of area-based management tools (4.30-6 p.m.)

24. Under this theme, it is proposed that questions under consideration may include: What are the types of area-based management tools? What lessons have been learned from applying these tools, in particular within national jurisdiction? What are the challenges and opportunities in applying these tools in areas beyond national jurisdiction?

7 May, morning

Panel 5 — Assessments of sectoral and cumulative impacts (10-11.30 a.m.)

25. Under this theme, it is proposed that questions under consideration may include: How are sectoral and cumulative impacts on marine biodiversity in areas beyond national jurisdiction assessed? Are there lessons learned and best practices in assessments? Are there assessments of the effectiveness of specific forms of area-based management tools to address specific sectoral impacts?

Panel 6 — Technological, environmental, social and economic aspects (11.30 a.m.-1 p.m.)

26. Under this theme, it is proposed that questions under consideration may include: What infrastructure and type of expertise are needed to conserve and sustainably use marine biodiversity? What are the social benefits of conservation and sustainable use of marine biodiversity? Is traditional knowledge relevant in the development of conservation and management tools for marine biodiversity in areas beyond national jurisdiction? What are the costs incurred and the revenues generated from conservation and sustainable use of marine biodiversity in areas beyond national jurisdiction? What methods have been most successful in identifying and mobilizing relevant stakeholders?

7 May, afternoon

Panel 7 — Existing regimes, experiences and best practices (3-4.30 p.m.)

27. Under this theme, it is proposed that an overview of the existing regimes and experience and best practices be presented with a view to considering issues such as: What are the principles and main characteristics of existing regimes, experiences and practices? What lessons can be learned from them? What are the benefits and challenges in enhancing coordination among regimes?

Panel 8 — Exchange of information on research programmes regarding marine biodiversity in areas beyond national jurisdiction; International cooperation and coordination; Capacity-building and the transfer of marine technology (4.30-6 p.m.)

(a) Exchange of information on research programmes regarding marine biodiversity in areas beyond national jurisdiction; International cooperation and coordination

28. Under this theme, panellists and participants are encouraged to share information on existing research programmes, as well as on international cooperation and coordination. It is proposed that questions under consideration could include: What are the current means of cooperation and coordination, including the existing financial mechanisms, under international organizations? What is the nature of current practices for the undertaking of conservation and management (e.g., global, regional or national; public or private or public-private)? How can cooperation be effected for conservation and management in areas beyond national jurisdiction? What is the level of cooperation between institutions from developed and developing countries? What are the challenges in the effective participation in activities related to conservation and management of marine biodiversity of areas beyond national jurisdiction? What are the respective roles of North-South and South-South cooperation? What is the role of different stakeholders in the promotion of information-exchange and research?

(b) Capacity-building and the transfer of marine technology

29. What are the capacity needs to apply conservation and management tools, including area-based management and environmental impact assessments? What are the capacity-building activities that assist in applying those tools? What is the nature of the arrangements currently in place for the transfer of marine technology? What are the challenges to effective cooperation and coordination and transfer of marine technology? What mechanisms can be implemented to address those challenges?

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Ad Hoc Open-ended Informal Working Group to study issues relating to the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction
New York, 19-23 August 2013

Intersessional workshops aimed at improving understanding of the issues and clarifying key questions as an input to the work of the Working Group in accordance with the terms of reference annexed to General Assembly resolution 67/78

Summary of proceedings prepared by the Co-Chairs of the Working Group

1. Pursuant to paragraph 182 of General Assembly resolution 67/78, two intersessional workshops were convened by the Secretary-General at United Nations Headquarters, on 2 and 3 May and on 6 and 7 May 2013, respectively. The workshops were held with a view to improving understanding of the issues related to the conservation and sustainable use of marine biodiversity in areas beyond national jurisdiction and to clarifying key questions as an input to the work of the Ad Hoc Open-ended Informal Working Group to study issues relating to the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction ("the Working Group").

2. In accordance with the modalities set out in the terms of reference annexed to General Assembly resolution 67/78, the two workshops addressed the following topics related to the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction: marine genetic resources, and conservation and management tools, including area-based management and environmental impact assessments. Both workshops also considered issues related to international cooperation, as well as capacity-building and the transfer of marine technology.

3. The workshops were presided over by the two Co-Chairs of the Working Group, Palitha T. B. Kohona (Sri Lanka) and Liesbeth Lijnzaad (Netherlands), appointed by the President of the sixty-seventh session of the General Assembly, in accordance with paragraph 80 of Assembly resolution 60/30.

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4. Following consultations with Member States, the Co-Chairs organized each workshop in panels, which consisted of presentations by experts invited by the Co-Chairs followed by discussions, as reflected in the format and organization of work for the intersessional workshops (annex). Experts were selected on the basis of nominations received from Member States and as identified by the Co-Chairs, having due regard to the need to ensure equitable geographic representation as well as balanced representation of all relevant areas of expertise to cover the subjects of the workshops, as required by the terms of reference. The panels were intended to provide a forum for exploring any relevant aspect of the panel topics in greater depth and specificity, without presupposing any outcomes of the deliberations of and without reiterating discussions held in the Working Group.

5. Representatives from 68 Member States, 16 intergovernmental organizations and other bodies and 9 non-governmental organizations attended the workshops.

6. In accordance with the terms of reference annexed to resolution 67/78, the outcome of the workshops consists of the present summary of proceedings prepared by the Co-Chairs for transmittal as an input to the work of the Working Group. Owing to space constraints, the present summary focuses on the discussions held following the presentations. The presentations and additional materials provided by the experts are available on the website of the Division for Ocean Affairs and the Law of the Sea ("the Division") (www.un.org/Depts/los/biodiversityworkinggroup/biodiversityworkinggroup.htm).

I. Workshop on marine genetic resources

7. The workshop on marine genetic resources, held on 2 and 3 May 2013, included eight panels which addressed the issues identified in the terms of reference annexed to resolution 67/78 and outlined below.

A. Panel 1 — Meaning and scope; Extent and types of research, uses and applications

8. The first panel included the following presentations: "Basics of marine genetic resources" by Jianming Chen, Third Institute of Oceanography, State Oceanic Administration of China; "Marine genetic resources in areas beyond national jurisdiction — clarifying terminology and constraining expectations" by Kim Juniper, NEPTUNE Canada, University of Victoria, Canada; and "Marine microbiological research and possible applications" by Kazuhiro Kitazawa, Japan Agency for Marine-Earth Science and Technology.

9. In the ensuing discussions on the meaning and scope of the expression "marine genetic resources", a panellist noted that a number of relevant definitions, including of "genetic resources", were provided in existing legal instruments such as the 1992 Convention on Biological Diversity and its 2010 Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization ("the Nagoya Protocol"). The view was expressed that there might still be a need to further consider some of those definitions to address the uncertainties and ambiguities therein, as well as to standardize terminology.

10. In response to requests for clarification on the uses and applications of genetic resources, including the probability of commercial success from the utilization of marine genetic resources, a panellist explained that despite the limited knowledge of marine resources, including genetic resources, it was estimated that the odds of finding a commercially valuable compound were higher for marine organisms given the broader diversity of organisms in the oceans as compared with land. It was noted that it remained difficult to assess whether the potential of genetic resources of areas beyond national jurisdiction was different from that of genetic resources of areas within national jurisdiction. The panellist also drew attention to the possible value added of exploiting the marine biomass related to seabed mining considering the large quantity of sediment harvested by seabed mining companies, most of which contained microbes.

11. It was explained that the process of research began with collection at sea, followed by on-board or shore-based lab analysis. In that regard, while basic analysis could take place on board the research vessel, a panellist observed that laboratories on land were better equipped for detailed analysis of the samples. In most cases, samples were collected and preserved on board for future analysis on land, with the exception of live organisms, which required immediate analysis on board the research vessel.

12. It was observed that currently, scientific research on the genetic diversity of the oceans was mostly State-funded and carried out predominantly by developed countries. A panellist noted that current practices showed that State funding usually covered the actual collection and initial description of compounds. However, the process was not linear and it was often difficult to identify the point at which the private sector came into play or when it had recognized something of interest from the results of academic research that could trigger its longer-term involvement and investment.

13. The need for capacity-building and transfer of marine technology to level the playing field with regard to scientific research related to marine genetic resources was highlighted. It was also noted that databases, such as GenBank, were becoming more accessible to all users and that some developed States had been collaborating with developing countries. The Census of Marine Life, an international research programme, was cited as one example of such collaboration. However, it was also observed that collaboration between developed and developing countries was mostly carried out on a small scale, and often consisted of ad hoc activities on a bilateral basis.

14. It was recognized that the process of developing commercially viable products was slow and costly. Clarification was sought as to whether the value of marine genetic resources was inherent or resulted from the work carried out throughout the research and development process. In that regard, a panellist expressed the view that the value lay in the compounds identified as a result of an initial screening, which could then be reproduced in laboratory.

15. It was remarked that the lack of available information in patent documents on the exact geographical origin of marine genetic resources used in the development of an invention posed challenges. It was often impossible to establish which patents related to inventions based on marine genetic resources of areas beyond national jurisdiction. However, a panellist observed that since most research was taking place in coastal areas of tropical countries, it could be inferred that compounds used in

patented inventions also came from those areas. It was noted that efforts were under way to better identify the location and environment of sampled resources. A panellist also indicated that it was too early to determine whether areas within national jurisdiction or those beyond national jurisdiction would yield more promising compounds from a commercial point of view.

16. Some of the uses of marine genetic resources that were highlighted included: research on life and the origins of life; pharmaceuticals; bioremediation; and development of biofuels from marine algae. However, it was difficult to say which sector (e.g., public or private) was more involved in applications for patents.

17. A view was expressed that an implementing agreement to the United Nations Convention on the Law of the Sea should be adopted to address access to, and benefit-sharing from, the utilization of marine genetic resources of areas beyond national jurisdiction.

B. Panel 2 — Impacts and challenges to marine biodiversity beyond areas of national jurisdiction

18. The second panel included the following presentations: "Why should marine genetic resources be conserved?" by Ester Serrão, Centre for Earth Sciences, Faculty of Science and Technology, University of the Algarve, Portugal; and "Requirements for marine resources and approaches for managing the future" by Adam Ismail, Global Organization for EPA and DHA Omega-3, United States of America.

19. In the discussions that followed, it was reaffirmed that even though, to date, more species had been identified on land than at sea, the genetic diversity of the oceans was richer and might offer greater opportunities for future uses, including industrial applications of extremophiles.

20. The causes of biodiversity loss in the oceans, including loss of genetic diversity, and their effect on the production of ecosystem services were addressed. A panellist indicated that microbes played an important role in ecosystem functioning, including by regulating the climate, the absorption of methane before it was released into the atmosphere, as well as in bioremediation. It was highlighted that fishing, in particular overfishing, was a primary source of negative impacts on marine genetic resources, including through reduction of fish populations, removal of top predators and overproduction of biomass. In particular, it was noted that seamounts, which are habitats for several species, as well as coral and the sediments of the ocean floor were affected by destructive fishing practices, including trawling, as well as by drilling.

21. The negative impact of mining was also highlighted, particularly with regard to the unique bacteria and microbes found in ocean floor sediments as well as various vent species which occur in narrow corridors in the oceans.

22. It was noted that ocean acidification and water temperature rise were also affecting genetic diversity. However, such phenomena were more difficult to address as they were not localized but took place on a global scale.

23. Ways to preserve marine genetic resource diversity were discussed. In that regard, a panellist noted that genetic loss could often take place unnoticed. Another

panellist observed that the research needed for measurements that would allow assessing how much of the catch should be kept in order to preserve marine genetic diversity was not currently being carried out. The need for this baseline information to prevent collapse of stocks and to promote recovery was highlighted. In that regard, it was suggested that temporary catch limits could be used to preserve marine genetic diversity. Baseline information would also assist with regard to the impacts of seabed mining before mining licences were granted. The possible future role of the International Seabed Authority with respect to marine genetic resources was raised by a delegation in that regard.

C. Panel 3 — Technological, environmental, social and economic aspects

24. The third panel included the following presentations: "Environmental aspects of marine genetic resources" by Marjo Vierros, Institute of Advanced Studies, United Nations University, and "Marine genetic resources: technical challenges values" by Sophie Arnaud-Haond, Institut français de recherche pour l'exploitation de la mer.

25. In the ensuing discussions, limitations in oceanographic skills and molecular biology, as well as the high costs of research and development related to marine genetic resources were highlighted.

26. A panellist reiterated that it was still a challenge to identify the geographic areas of origin of marine genetic resources used in patented inventions, with the possible exception of the high ratio of patents related to organisms from hydrothermal vents. It was observed that that could be attributed to the practice of preventive patenting or to improvements in technology which allowed easier identification of valuable resources from, and access to, those ecosystems.

27. In relation to patents based on species that spanned areas within and beyond national jurisdiction, a panellist observed that some discussions were taking place in the context of the Convention on Biological Diversity regarding transboundary genetic resources. It was pointed out that the practice relating to gas resources shared between countries could also be considered for management purposes.

28. The need for incentives to improve capacity-building and access to resources was emphasized, in particular in relation to oceanographic tools and molecular technologies. In that context, participation in research cruises, exchange programmes and patent pools was mentioned. Reference was also made to the International Drug Purchase Facility (UNITAID) as an example of an innovative financing mechanism which supported, for example, the Medicines Patent Pool, whereby pharmaceutical patent holders voluntarily licensed their drug to other drug manufacturers in exchange for royalty payment. The other manufacturers could then produce cheap generic versions of the drug.

29. With regard to the environmental impacts of the sampling of marine genetic resources, it was observed that such impacts ranged from minimal to non-existent when the size of the samples was small and the collection was a one-off event. Such impacts could increase if repeated collections or great quantities of samples were necessary. Impacts were also more likely when targeted organisms were rare, had a restricted distribution, or were located in pristine or sensitive environments. The

view was expressed that since marine genetic resources were encoding information and such information could be replicated, there was no need for additional samples. A panellist acknowledged that the use of marine genetic resources usually involved the extraction of genetic information from a sample for subsequent analysis and culture in a laboratory. However, should it be impossible to carry out a laboratory analysis or culture, there might be a need to procure additional living resources. That would not qualify as a sampling activity but as harvesting. It was anticipated that the need for the latter would likely become less common with advancements in molecular biotechnology. However, some organisms, such as krill or Sargasso weed, could still require significant harvesting.

30. A panellist drew attention to the development of voluntary codes of conduct to address possible impacts.

31. A panellist observed that environmental impact assessments and strategic environmental assessments were rarely undertaken in connection with research related to marine genetic resources, which made it difficult to assess cumulative impacts. Specific obligations for environmental impact assessments in global and regional instruments were recalled.

D. Panel 4 — Access-related issues; Types of benefits and benefit-sharing

32. The fourth panel included the following presentations: "Access to marine genetic resources: collecting organisms and facilitating samples and data" by Kjersti Lie Gabrielsen, Marbank, Norwegian Institute of Marine Research; "Exploring different benefits and benefit-sharing approaches" by Thomas Greiber, Environmental Law Centre, International Union for Conservation of Nature, Switzerland; and "Marine genetic resources: benefit-sharing and obstacles" by Marc Slattery, University of Mississippi, United States of America.

33. During the discussions that followed, some of the difficulties in developing and implementing benefit-sharing arrangements for marine genetic resources in areas beyond national jurisdiction were highlighted. In particular, the difficulty of identifying partners for such arrangements compared to the bilateral approach that existed for genetic resources within national jurisdiction was pointed out. A panellist expressed the view that the benefit-sharing and prior informed consent provisions of the Nagoya Protocol would not apply to resources obtained in areas beyond national jurisdiction, as there was no specific State with which to share benefits. The issue was raised of how non-monetary benefits might be shared among a wide group of States. A panellist observed that, in such cases, the benefits could be shared with all States through the allocation of those benefits towards addressing global issues, such as climate change. In that regard, it was also useful to consider the diffuse societal benefits that could be had from increased scientific knowledge. Partnerships were also cited as examples of sharing of non-monetary benefits. However, a panellist noted that partnerships were often created on the basis of informal personal contacts between researchers in various countries and academic institutions, since identifying the responsible entity in a governmental structure could sometimes be difficult.

34. The arrangement under the International Treaty on Plant Genetic Resources for Food and Agriculture of the Food and Agriculture Organization of the United

Nations (FAO) (hereafter "FAO International Treaty") was cited as an example of multilateral benefit-sharing that included the possibility of monetary and non-monetary benefits, such as the funding of research projects and access to samples. A panellist also recalled that the sharing of monetary benefits through a public trust fund was envisaged under the Nagoya Protocol. Reservations were expressed regarding the fairness of current benefit-sharing arrangements.

35. A panellist suggested that a number of provisions of the United Nations Convention on the Law of the Sea, including the general provisions related to marine scientific research, embodied some aspect of benefit-sharing. The view was expressed, however, that the regime established for the Area was a better example of such aspects under the Convention, since the provisions of Part XIII relating to the participation of coastal States' scientists and to data, samples and research results reflected a counterpart to the possibility for a researching State to access areas under the jurisdiction of a coastal State and use its natural resources rather than benefit-sharing.

36. Examples of specific domestic access and benefit-sharing regimes were also discussed. Under Norwegian law, for example, a permit will be required for marine samples to be taken from areas within national jurisdiction and for samples to be taken by Norwegian nationals from areas beyond national jurisdiction. However, concerns were expressed over the difficulties in tracing where marine genetic resources originated. Uncertainty was also expressed as to how to ensure that activities relating to marine genetic resources in areas under the jurisdiction of developing States would not violate the sovereign rights of those States. In that regard, a panellist observed that access agreements needed to be understandable by, and respect the jurisdiction and sovereignty of, the coastal States concerned. In that regard, developing States could benefit from the example of access agreements developed in other sectors, including the forest sector. The possibility of sharing patent rights with developing coastal States was raised. A panellist observed that whereas patents were usually only held by those who made a discovery, the benefits arising out of the use of such patents could be shared.

37. Regarding the respective roles of public and private funds in research, a panellist explained that both public and private funds contributed to scientific research leading to the development of pharmaceutical products, but there was a broad spectrum of ways in which States approached resource management and research funding. It was observed, however, that a large part of the costs were borne by the private sector as States usually provided funding for an initial short-to-medium phase and the pharmaceutical sector usually bore the cost for longer-term research. Regarding the priorities for research activities, a panellist noted that universities defined the research agenda and if no useful compound emerged for future applications, researchers would continue their basic research projects. It was also observed that accidental discoveries were more likely to be made by academia than by industry.

38. The potential value of products derived from research on marine genetic resources was discussed. A panellist suggested that large commercial profits from marine genetic resources were still rare and emphasis should therefore be on the sharing of the non-monetary benefits resulting from scientific research. However, it was noted that the future potential of marine genetic resources was significant and expected to increase, in particular for microorganisms. Moreover, it was explained

that the benefits for industrial uses would become available more quickly because fewer tests were necessary for industrial uses compared with those required for pharmaceutical uses.

39. Definitions of bioprospecting and marine scientific research were discussed. In that connection, it was recalled that all activities of research in the marine environment qualified as marine scientific research under the United Nations Convention on the Law of the Sea. A view was expressed that bioprospecting was not defined in the Convention, and the proposed definitions of bioprospecting left out part of the activities carried out on board ships by research institutions in the context of pure research but which did not necessarily involve the search for genes. A panellist observed that the distinction between pure and applied research was not always clear-cut but the nature of bioprospecting was to look for commercially valuable compounds. In that regard, policy instruments might need to take into account such developing trends in research. In that context, some panellists also noted that most of the material collected was the result of academic research and that shifts in the strategies of companies had occurred whereby those companies had reduced their own research activities and were instead buying licences and lead compounds from smaller academic groups and companies.

E. Panel 5 — Intellectual property rights issues

40. The fifth panel included the following presentations: "Appropriation of marine genetic resources through intellectual property rights" by Carlos Correa, Center for Interdisciplinary Studies on Industrial Property and Economics Law, University of Buenos Aires; "Infringement and innovation in respect of access and benefit-sharing in areas beyond national jurisdiction" by Norman Siebrasse, Faculty of Law, University of New Brunswick, Canada; and "Monitoring marine genetic resources using taxonomic and patent data" by Paul Oldham, Institute of Advanced Studies, United Nations University.

41. During the ensuing discussions, it was noted that some of the problems of the existing patent system were patent trolls and thickets, which impeded innovation. In light of the fact that there was a need for benefit-sharing mechanisms that avoided those practices, reference was made to the possibility of using open innovation approaches that would particularly benefit developing countries. In that connection, a panellist noted that there was also industry interest in a system that would lead to advances in technology without the challenges associated with the patent system.

42. The view was expressed that given that the ultimate goal of research on genetic resources was the development of novel processes and products or the improvement of existing ones, the question of the role played by patents in the context of benefit-sharing was of paramount importance to countries that could not conduct marine research on their own. In view of the fact that genetic resources and benefit-sharing had been discussed in different forums, including the Convention on Biological Diversity, the World Health Organization (WHO), FAO and the Council for the Trade-Related Aspects of Intellectual Property Rights (TRIPS Council), a question was raised as to how countries that did not have the necessary capabilities could ensure that the TRIPS Agreement and discussions related to oceans could support each other. In that connection, a panellist recalled that the further extension of the transition period under article 66.1 of the TRIPS Agreement for least

developed country members of the World Trade Organization (WTO) was under discussion at the TRIPS Council. Such a transition period could provide an environment under which those countries might develop their own capacity.

43. The patentability of microorganisms in their natural state was discussed. A panellist expressed the view that, pursuant to article 27 of the TRIPS Agreement, only those microorganisms that had been genetically modified would be patentable. An observation was made that, despite several attempts at harmonizing patent laws, patents were regulated differently under different domestic intellectual property law systems and that some jurisdictions allowed for the organisms in their natural state to be patented.

44. The interface between intellectual property law, benefit-sharing and the law of the sea was discussed in the context of the different jurisdictional contexts within which each applied. In that regard, a panellist expressed the view that when the same genetic material was found in multiple national jurisdictions, benefit-sharing took place according to the definition in the Convention on Biological Diversity of "country of origin". With regard to marine genetic resources of areas beyond national jurisdiction, an understanding of what constituted the "country of origin" might be required.

45. The issue of how to allocate responsibility for benefit-sharing between those research institutions which conducted research expeditions in areas beyond national jurisdiction and those which later developed commercial applications on the basis of the results of those expeditions was raised. In that regard, a panellist recalled that while most research cruises were sponsored by States, the results of the research and derivatives might be handled by private enterprises and researchers, and the users of the resources were not necessarily those that had sourced the organism. He suggested that the allocation of benefits could be addressed before the commercialization process in contracts between the research institutions and the entities which subsequently carried out the commercial development, especially when the research institutions were aware that commercialization would ensue. It was acknowledged, however, that that might not always be possible since commercial development by the private sector could be based on the findings of an academic publication without the prior knowledge or agreement of the academic entity.

46. With regard to mapping the origin of marine genetic resources, a panellist indicated that geo-referencing based on species named in patents was useful, although not entirely reliable. It was also noted that studies might be needed to determine whether the State institutions that sponsored research cruises were also those that had filed for the patents. It was further observed that, under the patent laws of certain States, the disclosure of the origin of genetic resources was not required. In that connection, a panellist suggested that adopting a requirement for disclosure would not impose any additional burden on patent authorities since they would not be required to investigate the origin or compliance with benefit-sharing, but simply ensure that the declaration of origin had been made by an applicant. Attention was drawn to the trend towards the requirement by a growing number of developing and developed countries of the identification of the sourcing location in patent applications.

47. It was advanced that the design of any future access and benefit-sharing regime for marine genetic resources of areas beyond national jurisdiction would

need to address the current lack of an obligation, under international law, to disclose the origin of organisms. In that regard, some panellists suggested that a number of checkpoints to determine the geographical origin of marine genetic resources could be placed at various stages, including the stage at which a product was being approved for commercialization or in the context of a material transfer agreement. A panellist also observed that disclosing origin upstream of the commercialization process would be more effective. Another panellist stated that where there were attempts to avoid disclosure, information from taxonomic data could assist in determining the geographical origin of an organism.

F. Panel 6 — Global and regional regimes on genetic resources, experiences and best practices

48. The sixth panel included the following presentations: "Global regimes on genetic resources: the Convention on Biological Diversity and the Nagoya Protocol" by Lyle Glowka, Secretariat of the Convention on Migratory Species of Wild Animals; "Global regimes on genetic resources: the food and agriculture, and health sectors" by Claudio Chiarolla, Institut du développement durable et des relations internationales, Institut d'études politiques de Paris; "Regional regimes on genetic resources, experiences and best practices" by Arianna Broggiato, Biodiversity Governance Unit, Centre for the Philosophy of Law, Catholic University of Louvain, Belgium; and "Scientific data about plankton ecosystems are key for decision-making about high seas governance and monitoring" by Eric Karsenti, European Molecular Biology Laboratory, Germany.

49. In the ensuing discussions, it was noted that the Convention on Biological Diversity and the Nagoya Protocol, while only applicable to genetic resources within national jurisdiction, provided a good starting point to discuss access and benefit-sharing mechanisms for marine genetic resources in areas beyond national jurisdiction. The difficulties in applying the closed-list approach to marine genetic resources in the FAO International Treaty were noted in light of the fact that such resources could potentially include thousands of species, many of which were still to be discovered. In particular, a panellist highlighted as potential challenges the handling of contracts and keeping track of transactions. In that regard, the panellist indicated that the model provided by the WHO Pandemic Influenza Preparedness Framework could be less burdensome than the use of standard material transfer agreements, as provided for in the context of the FAO International Treaty. In situations where it was difficult to conclude access and benefit-sharing agreements, the role of voluntary codes of conducts for scientists, with the aim of fostering the public domain nature of research results, was also highlighted as a form of non-monetary benefit-sharing. Delegations were informed about the progress in the ongoing consultations related to Article 10 of the Nagoya Protocol related to a global multilateral benefit-sharing mechanism.

50. With regard to the applicability of the structure of the FAO International Treaty to marine genetic resources of areas beyond national jurisdiction, a panellist suggested that the institutional structure of that treaty and its recognition of FAO as a third-party beneficiary who could act to enforce treaty rights in cases where the provider of genetic resources did not seek enforcement, could provide useful lessons. Other noted features of the FAO International Treaty were the non-obligatory contribution of material to the multilateral system by private

enterprises and the limitation of the use of the system to the particular type of genetic resources used for food and agriculture, with other uses having to be negotiated on a bilateral basis under the Convention on Biological Diversity.

51. Concerns were reiterated regarding the lack of capacity of developing countries to develop and use marine genetic resources. In that connection, a panellist suggested that the capacity-building provisions of the Convention on Biological Diversity and the Nagoya Protocol could be drawn upon even if they applied more specifically to genetic resources within national jurisdiction. He also indicated that the regime on the transfer of marine technology contained in the United Nations Convention on the Law of the Sea was still a useful reference. Attention was drawn, however, to the limited implementation of Part XIV of the United Nations Convention on the Law of the Sea, and the view expressed that technology transfer should not be tied to intellectual property rights. With regard to the effectiveness of the provisions on technology transfer contained in article 16 of the Convention on Biological Diversity, a panellist noted that since they had either not often been used or studied, the extent of technology transfer to developing countries was difficult to assess. In addition, it was observed that transfer of technology often took place on a bilateral basis and that contracts might not be publicly available. It was further noted that patenting needed to be practised responsibly by ensuring that patents did not exclude others from using the materials. That would allow for more open access to governmental research results by all States, in particular developing countries.

52. A view was expressed that existing regimes were not adequate for marine genetic resources of areas beyond national jurisdiction and to address the concerns of developing countries. It was therefore suggested that solutions should also be sought by considering the provisions of the United Nations Convention on the Law of the Sea. A panellist acknowledged, in that regard, that the Convention embodied notions of equity that could be applied. It was noted that any disagreement that might exist on the legal status of marine genetic resources of areas beyond national jurisdiction under the Convention should not constitute an obstacle to achieving a pragmatic solution to achieve benefit-sharing.

53. The possibility for a future access and benefit-sharing regime for marine genetic resources of areas beyond national jurisdiction to be used for promoting greater conservation was considered. A panellist suggested, in that regard, that the conservation of marine biodiversity beyond areas of national jurisdiction was a benefit to mankind as a whole and should be a component of an access and benefit-sharing regime. He noted, however, that it might be difficult, at least initially, to capture monetary benefits to that end. In that regard, providing fair and equitable access to samples and data was one of the most immediate and promising ways of sharing benefits with humankind as a whole, in light of the current inequities in terms of physical access to areas beyond national jurisdiction and of access to samples and data. Another panellist concurred that one of the most important ways of sharing benefits was to be able to use the resources. The FAO International Treaty had been successful in that regard by unlocking genetic diversity. The feasibility of designing an access and benefit-sharing mechanism that covered both known resources and those to be still discovered was also raised.

G. Panels 7 and 8 — Exchange of information on research programmes regarding marine biodiversity in areas beyond national jurisdiction; International cooperation and coordination; Capacity-building and the transfer of marine technology

54. The seventh and eighth panels were combined into a single panel which included the following presentations: "Exchange of information on marine biodiversity research" by Caroline Bissada-Gooding, Barbados Coastal Zone Management Unit; "Analysis of the scientific cooperation and research projects on the Tara Arctic and Tara Oceans expeditions as an innovative model for international scientific cooperation on marine biodiversity" by André Abreu, Tara Expeditions, France; "Addressing collective marine biotech and bioprospecting challenges: development, coordination and alignment of national, regional and pan-European research strategies and programmes" by Jan-Bart Calewaert, Marine Board, European Science Foundation, France; and "Relevant activities of the International Seabed Authority" by Nii Allotey Odunton, Secretary-General, International Seabed Authority.

55. In the ensuing discussion, the adverse impacts on the marine environment of the lack of a coordinated management approach in areas beyond national jurisdiction were noted with concern, particularly in areas of concentrated activity. The potential cumulative adverse impacts on seamounts resulting from cobalt-crust mining combined with bottom trawling were cited as an example.

56. Regarding the measures which the International Seabed Authority could take to verify the claims of contractors regarding their environmental practices, it was noted that although there would eventually be inspectors for the mining activities carried out by contractors in areas managed by the Authority, such inspectors had not yet been contracted owing to the lack of mining activities to date.

57. The possibility of using information generated by the environmental assessment procedures in the context of the International Seabed Authority to assess the impact of other human activities on marine genetic resources in areas beyond national jurisdiction was raised. In that context, it was noted that, given the state of mining activities, the current knowledge of biodiversity associated with polymetallic sulfides and cobalt-rich ferromanganese crust, as opposed to polymetallic nodules, was extremely limited. It was also noted that the process of collecting data during the exploration phase was ongoing and that only once the information had been collected and analysed would it be possible to identify the type of technology needed for the exploitation phase as well as the impacts of such technology on the marine environment. Moreover, environmental impact assessments would only be required for mineable areas after large-scale testing of mining equipment had begun.

58. Examples of international cooperation and capacity-building projects were discussed. In particular, it was noted that the European Marine Board was composed of various funding and research institutions, the scope of activities and capabilities of which varied significantly. In terms of collaboration, landlocked countries in the European area with an interest or capacity in marine biotechnology research could use the marine stations in coastal States. Some of those institutions engaged in considerable capacity-building as capacity also needed to be built in Europe. The International Seabed Authority Endowment Fund also provided some financing for marine scientific research programmes, including in the Clarion Clipperton Zone, for the benefit of developing States and technologically less developed States.

II. Workshop on conservation and management tools, including area-based management and environmental impact assessments

59. The workshop on conservation and management tools, including areas-based management and environmental impact assessments, held on 6 and 7 May 2013, included eight panels which addressed the list of issues identified in the terms of reference annexed to resolution 67/78, as outlined below.

A. Panel 1 — Key ecosystem functions and processes in areas beyond national jurisdiction

60. The first panel consisted of one presentation entitled "Key ecosystem functions and processes in areas beyond national jurisdiction" by Eulogio Soto Oyarzún, Universidad de Valparaíso, Chile.

61. During the ensuing discussions, knowledge gaps in ecosystem functions and processes were highlighted. These related, for example, to understanding and characterizing ecosystem changes, to evaluating their capacity to produce goods and services and to determining the effects of direct and indirect impacts as well as integrating socioeconomic impacts. It was observed that a connection existed between the loss of marine biodiversity and the loss of ecosystem services. It was also noted that many functions and processes in areas beyond and within national jurisdiction were either similar or closely linked.

62. The panellist further indicated that endemism of chemosynthetic organisms was particularly high in environments such as hydrothermal vents, cold seeps and seamounts. It was also noted that whale carcasses provided a habitat to a high level of endemic species. For example, many chemosynthetic organisms differed from one hydrothermal vent to another. Studies had also found differences between the top and the bottom of vent systems. Reference was made to the symbiotic relationship between many invertebrate species and bacteria and archaea in chemosynthetic environments.

63. A number of activities were highlighted as having impacts on ecosystem functions and processes in areas beyond national jurisdiction, including seabed mining, pollution, the dumping of waste and unregulated harvesting of resources. It was noted that some of those activities in areas beyond national jurisdiction were regulated by international instruments to which most States were parties.

B. Panel 2 — Impacts on and challenges to marine biodiversity beyond areas of national jurisdiction

64. The second panel included the following presentations: "Impacts and challenges of high-seas fisheries to marine biodiversity in areas beyond national jurisdiction" by Edwin Niklitschek, Centro I-Mar, Universidad de Los Lagos, Chile; "Human impacts on fisheries productivity in areas beyond national jurisdiction" by Callum Roberts, University of York, United Kingdom of Great Britain and Northern Ireland; and "Impacts and challenges to marine biodiversity beyond areas of

national jurisdiction" by Jihyun Lee, Secretariat of the Convention on Biological Diversity.

65. During the discussions that followed, particular concern was expressed regarding the impacts of overfishing, climate change and ocean acidification. The view was expressed that fishing was currently the main threat to marine biodiversity in areas beyond national jurisdiction. In particular, concerns were raised with regard to the impacts of bottom fisheries.

66. The need for regional fisheries management organizations to be strengthened was emphasized. It was suggested that that could be achieved by expanding their mandates with a view to applying ecosystem approaches, including biodiversity considerations, conducting performance reviews, sharing best practices and improving their monitoring and surveillance mandate. The need to improve transparency and accountability of regional fisheries management organizations, as recognized in the outcome document of the United Nations Conference on Sustainable Development, "The future we want", was also highlighted. In terms of best practices, some panellists noted that, while the Antarctic Treaty System provided a unique context, lessons could be learned from the experience of the Commission on the Conservation of Antarctic Marine Living Resources, including its application of an ecosystem approach, the use of a common database and information system and 100 per cent observer coverage. The enforcement measures of the North-East Atlantic Fisheries Commission were also cited as an example of best practices.

67. The need for regional fisheries management organizations to consider the impacts of fishing on non-target species, such as migratory species of seabirds and turtles, was also noted, as was the need to address gaps in knowledge of such impacts. At the same time, inherent difficulties in managing a wide range of target and non-target migratory species were highlighted. It was also suggested that regional fisheries management organizations should take into account the impacts of other human activities on fisheries productivity when adopting management measures.

68. Divergent views were expressed on the use of moratoriums on high seas fishing and area closures as a means to improve conservation of marine biodiversity in areas beyond national jurisdiction. Noting the current uncertainty about deep ocean and pelagic biology and processes as well as the relative importance of management measures on these processes, a panellist suggested that the high seas, or regulatory areas of regional fisheries management organizations, should be closed to fishing activities, at least temporarily, until the mandates of those organizations were expanded and/or reformed to be better equipped to manage fisheries. Another view was expressed that suspending the work of regional fisheries management organizations or closing the high seas to fishing might have a counter-effect of encouraging unrestrained fishing and illegal, unreported and unregulated fishing in those areas.

69. The work of the General Assembly in addressing the impacts of destructive fishing practices on vulnerable marine ecosystems and ensuring the long-term sustainability of deep-sea fish stocks, in particular pursuant to its resolution 61/105, as well as related developments in FAO and in regional fisheries management organizations, were highlighted. However, as some of the current measures were only temporary and subject to review, further efforts in the implementation of these

commitments was called for, including through the protection of habitats and the establishment of area closures. A panellist also observed that some regional fisheries management organizations had adopted definitions of "vulnerable marine ecosystems" which were more restrictive than what was contemplated in resolution 61/105, with the effect of leaving the majority of vulnerable marine ecosystems without protection.

70. Progress in the work of regional fisheries management organizations was highlighted, including ongoing performance reviews as well as the establishment of area closures and new regional fisheries management organizations. It was emphasized that there was a general trend towards a reduction of fishing effort in the deep sea, in particular in the North-East Atlantic. It was suggested that the decrease was partly due to the fact that deep sea fisheries required larger vessels and more complex gear and was therefore less attractive from an economic perspective. Developments within the International Commission for the Conservation of Atlantic Tunas to reduce catch limits, which had led to improvements in the status of relevant stocks, were also recalled.

71. It was noted that a disaggregated analysis of the performance of regional fisheries management organizations presented an obstacle to identifying which ones had been successful and which had not, and the lessons that could be learned. It was also observed that the success or failure of a regional fisheries management organization depended on the political will or lack thereof of its member States.

72. The impacts of other pressures which were beyond the mandates of regional fisheries management organizations were also recalled, including impacts from shipping, seabed mining, climate change, ocean acidification, ocean noise and land-based sources of pollution.

73. Reservations were expressed about the use of marine protected areas in areas beyond national jurisdiction, noting that a precautionary approach would be preferable. The benefits that marine protected areas would provide to biodiversity conservation, including the prevention of cumulative impacts and the management of user conflicts, were also highlighted. Challenges that could impede the success of marine protected areas were observed. Those challenges included the establishment of such areas in the pelagic realm where species travelled long distances. In that regard, a panellist noted that, in order to provide a useful tool to protect migratory species, marine protected areas would need to be established throughout the range of such species. Noting recent trends towards the establishment of large marine protected areas, another panellist stressed that protected areas needed to be relevant from an ecological and biological perspective rather than necessarily be extensive in size.

74. It was suggested that cross-sectoral integrated management approaches should be developed. In that context, the need to address the accelerating impacts from various pressures as well as manage conflicting uses was highlighted. A panellist suggested putting into place management measures that would address possible future impacts in addition to those already taking place.

75. The Convention on Biological Diversity process on the application of criteria for ecologically or biologically significant marine areas was discussed, including how information on such areas could be used by other bodies in developing management measures. A panellist expressed the view that the naturalness criterion was one of the least useful for the purposes of identifying candidate areas for marine

protected areas. Instead, the criteria of recoverability should be considered. Another panellist noted that the level of information currently available from the Convention process was too limited to adequately assess all the criteria and facilitate the identification of suitable areas.

76. It was emphasized that further progress should be made in the application of the criteria, including through more systematic assessments, improvements in data quality as well as increased scientific research. A panellist noted that most of the data currently available were fisheries-dependent data, and stressed the need for large-scale cross-sectoral initiatives such as the Census of Marine Life to continue gathering the required data. Another panellist observed that close collaboration between the Secretariat of the Convention on Biological Diversity and other bodies, such as FAO, the United Nations Environment Programme (UNEP) and regional fisheries management organizations, had demonstrated the benefits of sharing data and expertise across sectors. The need for collaboration between the ecologically or biologically significant marine areas (EBSA) process and the Regular Process for Global Reporting and Assessment of the State of the Marine Environment, including Socioeconomic Aspects, was highlighted. Capacity-building and increased political awareness were also considered essential.

C. Panel 3 — New and emerging uses of and experimental activities in areas beyond national jurisdiction

77. The third panel included the following presentations: "Overview of new and emerging uses of the ocean areas beyond national jurisdiction" by Takehiro Nakamura, United Nations Environment Programme; and "Trends in new and emerging uses of, and experimental activities in, areas beyond national jurisdiction and implications for the conservation and sustainable use of marine biodiversity beyond areas of national jurisdiction" by Duncan Currie, Globelaw, New Zealand.

78. During the ensuing discussions, the following new and emerging uses of and experimental activities in areas beyond national jurisdiction, along with issues of particular concern, were highlighted: climate engineering, which was described as potentially having the most significant effect; ocean fertilization, which had the potential to affect large areas; marine debris and the presence of microplastics in the oceans, in view of the lack of technology to remove them; increasing demand for aquaculture, which could develop in areas beyond national jurisdiction with the development of mobile cages; and underwater noise.

79. It was observed that, at present, new and emerging uses and experimental activities were carried out primarily within areas of national jurisdiction since the relevant technologies had not been fully developed for use in areas beyond national jurisdiction and the cost for such development had been prohibitive. The possibility that the new and emerging uses and experimental activities would conflict with existing uses of areas beyond national jurisdiction such as fishing, seabed mining and the laying of submarine cables was also mentioned.

80. The need for assessments of the impacts of new and emerging uses and of experimental activities on marine biodiversity in areas beyond national jurisdiction, including cross-sectoral environmental impact assessments, was emphasized. A number of considerations were raised with regard to cross-sectoral environmental impact assessments such as the identification of the entity that would carry out the

assessments as well as the body to which the results of such assessments would be reported. It was also noted that, even where there had been assessments, they had not been comprehensive.

81. The panellists also stressed the importance of sharing information and data regarding the impacts of new and emerging uses of and experimental activities in areas beyond national jurisdiction.

82. Discussions addressed the relevant legal framework and enforcement mechanisms for new and emerging uses of and experimental activities in areas beyond national jurisdiction. The overarching importance of the United Nations Convention on the Law of the Sea in the governance of all uses of the oceans and their resources, including new and emerging uses of and experimental activities in areas beyond national jurisdiction, was emphasized. The role of the 1972 Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter ("the London Convention") and its 1996 Protocol in implementing certain provisions of the United Nations Convention on the Law of the Sea was also stressed. In that regard, a panellist observed that some of the new and emerging uses and experimental activities might already be covered by existing instruments.

83. With regard to regulatory instruments to address ocean noise and whether such pollution in areas beyond national jurisdiction was sufficiently covered by existing instruments, a panellist noted that several sectoral bodies addressed noise pollution in the marine environment. In that regard, attention was drawn to the relevant work of the Convention on Migratory Species of Wild Animals and the recommendations in the context of the Convention on Biological Diversity on assessments of noise pollution. Another panellist, however, noted that there might be a gap concerning the assessment of potential impacts of seismic testing. Concerning noise pollution from seabed mining in areas beyond national jurisdiction, a panellist suggested that the relevant management measures could possibly fall within the competence of the International Seabed Authority.

84. With regard to ocean fertilization, a panellist stressed that experimental activities should be designed so that the impacts of such activities on marine and coastal ecosystems could be measured. Another panellist suggested that there might be a gap in the governance of climate-related geoengineering. In that context, the work in the context of the Convention on Biological Diversity to analyse the regulatory framework for climate-related geoengineering relevant to the Convention was noted.

85. Issues related to responsibility for controlling and regulating new and emerging uses and experimental activities which could have negative impacts in areas beyond national jurisdiction were raised. The importance of establishing the responsibility of States for activities in areas beyond national jurisdiction was emphasized. It was noted that that was not always possible, particularly in relation to unlawful or unregulated ("rogue") experiments. Attention was drawn to the responsibility of flag States in areas beyond national jurisdiction or of States within whose jurisdiction activities took place which could have negative impacts in areas beyond national jurisdiction. It was also noted that the identification of the responsible flag State could be complicated by cases where there had been reflagging or when flags of convenience had been used. The importance of providing compensation when articles of the United Nations Convention on the Law of the Sea had been infringed was also raised.

D. Panel 4 — Types of area-based management tools

86. The fourth panel included the following presentations: "Area-based management tools" by Erik Jaap Molenaar, Utrecht University, the Netherlands and the University of Tromsø, Norway; and "Fisheries and spatial management measures in areas beyond national jurisdiction" by Jessica Sanders, FAO.

87. In the ensuing discussions, the central role of the United Nations Convention on the Law of the Sea and the United Nations Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks ("the United Nations Fish Stocks Agreement") in defining the rights and duties of States in taking measures for the management of marine resources and the protection and preservation of the marine environment was reiterated.

88. The role of regional organizations and initiatives in taking measures in areas beyond national jurisdiction was discussed. The experience and lessons learned in the context of the 1992 Convention for the Protection of the Marine Environment of the North-East Atlantic ("the OSPAR Convention"), in particular concerning the cross-sectoral approach to the establishment of marine protected areas in areas beyond national jurisdiction, were highlighted. It was noted, in that regard, that the process within the OSPAR Convention was an attempt by its Contracting Parties to implement their obligations under the United Nations Convention on the Law of the Sea and that non-Contracting Parties were not bound by the measures adopted in that context. It was also observed that the process focused on achieving an objective and provided a framework for cooperation to that end. The adoption of the measures necessary to achieve that objective was a matter for the competent sectoral organizations.

89. Concern was expressed about using the experience of the OSPAR Convention as a model. In particular, the view was expressed that the OSPAR Convention and other regional seas conventions did not have the competence under the United Nations Convention on the Law of the Sea, nor the legitimacy, to take measures in areas beyond national jurisdiction such as the establishment of marine protected areas. In that context, the exclusive competency of the International Seabed Authority in the Area was stressed. The view was also expressed that the concerns about the OSPAR Convention example of cross-sectoral cooperation did not provide a sufficient basis for the conclusion that an implementing agreement to the United Nations Convention on the Law of the Sea was needed. It was observed that the fact that discussions among States were ongoing regarding the need for a legal regime for the conservation and sustainable use of marine biodiversity beyond areas of national jurisdiction attested to the concerns of many States over regional or cross-sectoral approaches and initiatives.

90. A panellist observed that the experience of the OSPAR Convention had been one of trial and error from which lessons could be learned. He further noted that the only good example of the establishment of an integrated area-based management tool could be found in the context of the Convention on the Conservation of Antarctic Marine Living Resources. The process to establish specially protected areas in the context of the Convention for the Protection of the Marine Environment

and the Coastal Region of the Mediterranean ("the Barcelona Convention") was also highlighted.

91. A panellist suggested that an implementing agreement to the United Nations Convention on the Law of the Sea could be drafted so as to legally bind non-parties to regional organizations by the measures adopted by those organizations. Thus, there would be an obligation at the global level to comply with the decisions of regional bodies.

92. It was noted that substantial progress had been made by regional fisheries management organizations/arrangements in managing fisheries in an ecosystem context, with a view to addressing the impacts of fishing on marine biodiversity beyond areas of national jurisdiction. However, it was recognized that subsidies and overcapacity still caused major problems and further work was needed in that regard. While the lack of political will within regional fisheries management organizations/arrangements was generally recognized as an issue to be addressed, it was observed that the level of political will differed in various regions, as did the measures adopted to conserve and sustainably use marine resources. In that regard, the suggestion was made that there must be substantive reasons why the developments within the OSPAR Convention area were not replicated in other regions. It was observed that other factors, such as the financial situation of a particular region or State, could also act as impediments to the development of adequate management measures. A panellist observed, however, that the lack of regional agreement or action in a particular region should not prevent appropriate management measures from being taken. In that regard, it was suggested that if a conclusion were reached at the global level that some protective measures were required but no action was taken at the regional level, such measures should be adopted at the global level.

93. Concern was expressed over the possible restriction on the freedom of navigation resulting from the establishment of marine protected areas or area closures in areas beyond national jurisdiction. However, it was pointed out that the establishment of such areas did not necessarily entail the prohibition of all human activities in those areas. The suggestion was also made that regional organizations having established such areas could, while allowing entry into the areas for navigation purposes, require non-parties to report entry into, and exits from, those areas.

94. It was recognized that some intergovernmental organizations, such as the International Maritime Organization (IMO), might have the capacity and ability to take into account a multitude of activities other than shipping when designing their area-based management tools, including with a view to addressing cumulative impacts. A panellist expressed the view that other international organizations could have similar capabilities and abilities, as those varied depending on the organization.

95. It was noted that some recent global initiatives related to oceans, including in relation to areas beyond national jurisdiction, needed to be more transparent and take better account of the interests of, and the need for involvement by, developing countries. Concern was also expressed regarding investments in those initiatives while there was no universal regime for addressing the conservation and sustainable use of marine biodiversity in areas beyond national jurisdiction.

E. Panel 5 — Assessments of sectoral and cumulative impacts

96. The fifth panel included the following presentations: "Environmental impact assessments, strategic environmental assessments and biodiversity in areas beyond national jurisdiction — Current arrangements" by Jake Rice, Fisheries and Oceans Canada; and "Gaps and options in the assessment of impacts on marine biodiversity in areas beyond national jurisdiction" by Miguel Fortes, Marine Sciences Institute, University of the Philippines.

97. In the ensuing discussions, the extent to which environmental impact assessments were already being conducted in areas beyond national jurisdiction was considered. By way of example, it was observed that the International Seabed Authority, in keeping with its mandate, required environmental impact assessments as a pre-condition for mining activities. Similarly, for deep sea fisheries, General Assembly resolution 61/105 required assessments of the impacts of destructive fishing practices on vulnerable marine ecosystems. In that regard, a panellist noted that, as of 2011, all regional fisheries management organizations/arrangements had completed or almost completed evaluations of the implementation of the resolution. However, the process of implementation was incomplete and difficult to assess given that, in some cases, there were management or institutional failures in some regional fisheries management organizations/arrangements. It was further observed that IMO had developed guidance for conducting impact assessments and that the London Convention and Protocol also required such assessments. However, a view was expressed that the assessments required under resolution 61/105 and under IMO instruments were not consistent. There was also variability in the quality of the assessments carried out and the biggest challenge was the ability to assess activities jointly in a coordinated manner.

98. Different views were expressed regarding the relative difficulty of conducting assessments of sectoral and cumulative impacts in areas beyond national jurisdiction. A panellist noted that, in those areas, for any given site, there were likely fewer pressures than at a similar site in coastal areas, but that assessing cumulative impacts might still be challenging because of the interplay between different types of impacts. Another view was expressed that since there were fewer activities in areas beyond national jurisdiction, it might be easier and less costly to undertake such assessments there rather than in coastal areas. A panellist acknowledged that, in the short term, that encouraged greater confidence in sector-specific environmental impact assessments and strategic environmental assessments, adding, however, that the goal had to be to address the aggregate impacts of human activities.

99. A view was expressed that, since the main activity having negative impacts on marine biodiversity in areas beyond national jurisdiction was fisheries, it might be possible for regional fisheries management organizations to undertake cumulative impact assessments in those areas, taking into account other impacts by using a precautionary approach.

100. The panellists observed that while some States currently had insufficient capacity to undertake such assessments, that should not prevent the adoption of the required measures and engaging in a learning-by-doing process through a staged approach. However, it was noted that that could increase the burden and costs of the process for those wanting to undertake activities. The issue of whether there was

sufficient capacity to independently verify environmental impact assessments conducted in areas beyond national jurisdiction was also raised. In that regard, a panellist observed that verification capacity remained limited.

101. Regarding the trigger point for requiring environmental impact assessments, a panellist expressed the view that, on the basis of the available scientific knowledge, it was already possible to determine such trigger points. However, for areas beyond national jurisdiction there were uncertainties which did not exist for assessments on land. In that regard, attention had to be given to the evaluation of trade-offs between overly permissive and overly restrictive regulations.

102. It was suggested that the experiences accumulated in assessing areas within national jurisdiction could be considered for areas beyond national jurisdiction. In that regard, it was noted that lessons could be learned from the application of marine spatial planning in near-shore areas.

103. With regard to governance, a panellist expressed the view that although arrangements generally existed to carry out the necessary assessments at the sectoral level, it was difficult to assess whether an overarching framework was needed. The important role of General Assembly resolution 61/105 in addressing and strengthening the deep sea fisheries regime was highlighted, in spite of its being a non-legally binding instrument. A view was expressed that the effective functioning of a soft-law arrangement such as resolution 61/105 did not prevent the adoption of a binding instrument to govern the conservation and sustainable use of marine biodiversity beyond areas of national jurisdiction. It was suggested, in that regard, that the deep sea fisheries regime might have been stronger if a binding instrument had been concluded. Another view was expressed that some legally binding instruments were not adequately implemented or had not gained sufficient participation and that increasing awareness of issues and political will, regardless of the nature of the instrument or mechanism employed, was more important. The question was raised whether national regulations would have to be made compatible with international approaches.

104. A panellist observed that whether a new overarching instrument was adopted or not, it would be crucial to have a global understanding of who the relevant stakeholders were in areas beyond national jurisdiction, as well as to consider whether new arrangements would make accountability and compliance better.

F. Panel 6 — Technological, environmental, social and economic aspects

105. The sixth panel included the following presentations: "Social and environmental considerations for management in areas beyond national jurisdiction" by Angelique Brathwaite, Barbados Coastal Zone Management Unit; and "Scientific expertise and infrastructure for marine biodiversity management" by Alf Håkon Hoel, Norwegian Institute of Marine Research.

106. During the discussions that followed, consideration was given to whether the process for identifying stakeholders for the management of areas beyond national jurisdiction could follow the approach applied for areas within national jurisdiction. In that regard, a panellist noted that a similar approach might be used to identify stakeholders, but that the outcome would necessarily be different. Information from intergovernmental organizations could also be used to supplement the list of

stakeholders beyond the known ones, such as fishers and bioprospectors. The Caribbean Large Marine Ecosystem project was cited as an example of engagement of a wide range of stakeholders, including regional fisheries management organizations and other regional organizations, UNEP and academic institutions.

107. Attention was also given to the Nansen project, an initiative of FAO to support the implementation of the ecosystem approach in the management of marine fisheries, including biodiversity. The initiative aimed at assisting developing countries in gathering information and data for that purpose. It was explained that the project included scientific research as well as policy components and was active in various developing countries around the world.

G. Panel 7 — Existing regimes, experiences and best practices

108. The seventh panel included the following presentations: "Existing regimes, experiences and best practices" by Kristina Gjerde, Global Marine and Polar Programme, International Union for Conservation of Nature, Switzerland; and "Ecosystem services and area-based management" by Nobuyuki Yagi, University of Tokyo.

109. In the ensuing discussions, the need to achieve the goal set out in the context of the Convention on Biological Diversity to establish representative networks of marine protected areas by 2020 was underlined. Particular attention was drawn to the benefits of linking that goal with other efforts to address impacts on the marine environment and the provision of ecosystem services.

110. A panellist suggested that large areas were needed to support ecosystem processes in the open oceans given that those processes worked on a far greater scale. The potential role of bioregionalization was raised in that regard. With regard to challenges in creating marine protected areas for pelagic species, the panellists suggested that, given the migratory nature of those species, consideration should be given to the creation of mobile marine protected areas. A panellist also noted that marine protected areas could not be sufficient on their own if measures to address the impacts of activities taking place outside of the areas but which could affect the ecological integrity of the areas were not also adopted.

111. Reference was made to efforts to create marine protected areas in areas beyond national jurisdiction, including in the context of the OSPAR Convention and the Commission on the Conservation of Antarctic Marine Living Resources and it was suggested that they could be used as models for other areas. A panellist noted, however, that those measures dealt only with certain activities and did not address cumulative effects. The panellist also observed that existing experiences were limited to developed countries, and there would be merit in considering other models for other regions where different circumstances prevailed. In that regard, the need to build regional capacity, including for monitoring and the conduct of impact assessments, was stressed.

112. A panellist noted that biodiversity considerations were not taken into account by all regional fisheries management organizations, in particular tuna organizations, in the adoption of management measures. In that context, it was observed that even sustainable fisheries would have impacts on the marine environment and lead to changes in marine ecosystems and life cycles. In that connection, attention was

drawn to the need to establish some marine protected areas where fisheries activities were not permitted. The view was expressed that tuna fisheries did not physically impact the seabed. It was also noted that progress was being made in regional fisheries management organizations to take ecosystem considerations into account.

113. The difference between the Convention on Biological Diversity criteria for ecologically or biologically significant marine areas and those for vulnerable marine ecosystems was discussed. It was stressed that the EBSA process aimed at providing scientific information to enhance protection of specific areas, but did not have consequences in terms of policy or management. In that regard, it was observed that whether an ecologically or biologically significant marine area should be the basis for a marine protected area depended on whether an activity was causing damage to that area. A panellist also drew attention to the fact that an ecologically or biologically significant marine area could be protected by tools other than a marine protected area. Conversely, it was recalled that the identification of a vulnerable marine ecosystem had consequences in terms of policy and management. It was suggested that, for that reason, policymakers might be reluctant to recognize the science underpinning the identification of vulnerable marine ecosystems.

114. A panellist noted that both the ESBA and vulnerable marine ecosystem processes were informed by the best available science and that the EBSA process could play a part in the selection of vulnerable marine ecosystems. In that connection, it was observed that benefits could be gained from the input of science across sectors, through a bottom-up contribution, as that would reduce duplication in research efforts and enhance coordination among policymaking processes.

115. Challenges in monitoring activities conducted in areas beyond national jurisdiction were discussed. In that context, attention was drawn to the need to identify stakeholders, which were often resource users, in order to foster coordination and cooperation among them. That would assist monitoring in areas beyond national jurisdiction and would also create an incentive for compliance with regulations and thus overcome issues linked to lack of political will.

116. The potential conflicting uses of areas beyond national jurisdiction, such as bottom fishing activities and seabed mining, were noted and the need for coordination among competent bodies highlighted. In that context, reference was made to the establishment, in the Pacific Ocean, of new regional fisheries management organizations which had a mandate to take into account activities other than fisheries. An understanding was expressed that any measures adopted by regional fisheries management organizations or regional environmental organizations in that regard would be without prejudice to the work of the International Seabed Authority, which had the mandate for mining activities in the Area.

117. Discussions also addressed the role of cross-sectoral coordination and whether lack of cross-sectoral coordination between organizations presented an obstacle to achieving the goals set by States. In that context, the need to address all activities impacting marine biodiversity in areas beyond national jurisdiction, as well as issues of competing jurisdictions and uses and cumulative effects of current and future activities, was discussed. Coordinating the implementation of measures at the sectoral and regional levels was emphasized. It was observed that the process was not one of competition but rather of complementarities and coordination between various competent organizations.

118. Challenges in achieving cross-sectoral coordination to conserve and sustainably use marine biodiversity in areas beyond national jurisdiction without an overarching legally binding mandate and framework setting out goals and purposes were highlighted. The need for an instrument that would provide for integrated marine protected areas in areas beyond national jurisdiction was expressed. It was observed that, under the current legal regime, interested States were able to establish a regional organization to coordinate sectoral activities. While that did not impose obligations on third States, a panellist alluded to the possibility of building into a regional mechanism an undertaking for third parties to not undermine the objectives of the measures adopted by that mechanism. The example of the specially protected areas of Mediterranean importance process was highlighted in that regard.

119. It was suggested that further efforts were needed to improve coordination among stakeholders and to achieve a cross-sectoral approach to management. With reference to the example of the Sargasso Sea initiative, a panellist observed that meetings of relevant bodies often occurred at the same time, making it difficult to coordinate policy discussions. It was also noted that coordinating activities in the United Nations system and at the sectoral level was an ongoing challenge.

120. Possible ways forward, including the development of new mechanisms and the expansion of mandates of existing bodies, were raised. In that regard, it was noted that a new global mechanism could provide international support for areas in need of protection and be complemented by measures adopted at the regional level. A panellist also suggested an approach that would combine areas with greater protection with areas within which a rational management of allowed activities could take place. In that context, the issue of the instruments that could be the most efficient in achieving an appropriate management of marine protected areas beyond areas of national jurisdiction was raised. In that regard, it was considered doubtful that memorandums of understanding would constitute the best mechanism.

H. Panel 8 — Exchange of information on research programmes regarding marine biodiversity in areas beyond national jurisdiction; International cooperation and coordination; Capacity-building and the transfer of marine technology

121. The last panel included the following presentations: "Trends in cooperation for research, management and capacity-building activities in ocean areas beyond national jurisdiction" by Martin Tsamenyi, Australian National Centre for Ocean Resources and Security, University of Wollongong; and "Ocean Biogeographic Information System (OBIS) and capacity-building needs for marine biodiversity data management" by Pat Halpin, Duke University, United States of America.

122. During the discussions that followed, the interconnectedness of areas within and beyond national jurisdiction was examined in relation to the spatial distribution of data. In that regard, a panellist noted that the available data did not follow the legal boundaries of maritime zones and therefore data had to be assessed in a broad context. In addition, it was observed that there was no centralized data repository for the results of research in areas beyond national jurisdiction. A panellist noted that, while several types of data were often available, such availability was not well advertised outside developed countries, and there should be greater efforts to make use of, and optimize, existing data infrastructure.

123. It was suggested that attention should be given to the compatibility of measures for areas within and beyond national jurisdiction, recognizing that such compatibility was a two-way process. Reference was made to obligations in international instruments that supported or provided for such compatibility, in particular the United Nations Fish Stocks Agreement. A panellist provided examples of efforts to ensure compatibility of measures, including the Pacific Oceanscape and the High Seas Pockets Special Management Areas of the Western and Central Pacific Fisheries Commission. The panellist also observed that compatibility did not mean the adoption of the same measures but that measures should have equivalent effect. For instance, the fact that a marine protected area existed within national jurisdiction did not necessarily mean that there should be such a protected area in the contiguous area beyond national jurisdiction.

124. The need for further scientific research in areas beyond national jurisdiction to fill data gaps was also discussed and reference was made to the resolutions of the General Assembly recalling the importance of marine science. In that regard, examples were provided of international collaborative marine scientific research projects, such as the Census of Marine Life.

125. It was also observed that South-South cooperation for marine scientific research was limited and that progress was mostly in developed regions. As a result, the need to increase South-South cooperation was emphasized, including in relation to marine genetic resources.

126. The need for capacity-building in both developed and developing countries for marine science in areas beyond national jurisdiction was also emphasized. Funding for projects in areas beyond national jurisdiction under the Global Environment Facility was discussed.

127. In light of the limited implementation of Part XIV of the United Nations Convention on the Law of the Sea on the development and transfer of marine technology, consideration was given to the difficulties in achieving technology transfer. A panellist observed that technology transfer could take different forms, including provision of software or data access.

128. In light of the fact that several research initiatives were independent, the need for global mechanisms for technology transfer and data-sharing was highlighted, as was the need to protect commercially confidential data and address data access, including through data protocols. A panellist suggested that the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services could have a role in data- and information-sharing. The role of the clearing house mechanism under the Intergovernmental Oceanographic Commission of the United Nations Educational, Scientific and Cultural Organization (UNESCO) was considered a more appropriate option. The suggestion was made that the establishment of a mechanism for sharing of marine scientific research data should be included in the post-2015 development agenda.

129. It was also observed that direct participation in joint research projects was more effective, in terms of building capacity, than information-sharing. The panellists also referred to increased cooperation between regional institutions, regional training programmes and workshops, mentoring, partnerships, linkages between regional institutions in both North and South and global scholarships as beneficial. In that regard, a panellist stressed that capacity-building should not be considered as a single activity but as a complex series of interrelated activities. The need to ensure sustainable capacity-building activities was highlighted.

Annex

Format and organization of work for the intersessional workshops aimed at improving understanding of the issues and clarifying key questions as an input to the work of the Working Group in accordance with the terms of reference annexed to General Assembly resolution 67/78 (New York, 2-3 and 6-7 May 2013)

I. Introduction

1. The General Assembly, in its resolution 67/78, requested the Secretary-General to convene, within existing resources, two 2-day intersessional workshops with a view to improving understanding of the issues related to the conservation and sustainable use of marine biodiversity in areas beyond national jurisdiction and clarifying key questions as an input to the work of the Ad Hoc Open-ended Informal Working Group to study issues relating to the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction ("the Working Group"), which will meet in New York from 19 to 23 August 2013. Pursuant to paragraph 182 of resolution 67/78, the two intersessional workshops will take place on 2 and 3 May and on 6 and 7 May 2013, respectively in accordance with the modalities set out in the terms of reference annexed to the resolution.

2. As reflected in the terms of reference, there will be two 2-day workshops that will address the identified topics for the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction, namely marine genetic resources (2-3 May 2013) and conservation and management tools, including area-based management and environmental impact assessments (6-7 May 2013). The workshops will also consider issues related to international cooperation, as well as capacity-building and the transfer of marine technology.

3. The Co-Chairs of the Working Group, Ambassador Palitha T. B. Kohona, Permanent Representative of Sri Lanka to the United Nations, and Liesbeth Lijnzaad, Legal Adviser, Ministry of Foreign Affairs of the Netherlands, who were appointed by the President of the sixty-seventh session of the General Assembly in consultation with Member States and taking into account the need for representation from developed and developing countries, have prepared the present draft format and organization of work. The document builds on the terms of reference annexed to General Assembly resolution 67/78 and on the concept paper which was presented to Member States at an informal briefing held in New York on 15 November 2012.

II. Methods of work

4. The intersessional workshops will be presided over by the Co-Chairs.

5. The workshops will be held in Conference Room 3 in the North Lawn Building at United Nations Headquarters. The workshops will be conducted in English. Interpretation into the other official languages of the United Nations will be provided only on an "as available" basis.

6. The workshops will comprise a series of panels, including presentations and general discussions. Individual presentations will be limited to 15 minutes and will aim at providing a factual overview of the topics identified in paragraph 8 of the terms of reference annexed to General Assembly resolution 67/78. It is suggested that, whenever possible, a flexible time allocation will be provided to each panel to allow for an interactive discussion and to take into account that some panels may include fewer speakers than others. In this regard, it is proposed that the panels should not comprise less than two presentations, so as to ensure a balanced and diverse presentation of the topics.

III. Output

7. Pursuant to paragraph 9 of the terms of reference, the output of the workshops will consist of a summary of proceedings prepared by the Co-Chairs for transmittal as an input to the work of the Working Group. The summary will reflect key elements of the presentations by experts and of the interactive discussions among participants.

8. In accordance with paragraph 10 of the terms of reference, the summary of proceedings, presentations and additional materials provided by the experts will be posted on the website of the Division for Ocean Affairs and the Law of the Sea.

IV. Organization of work

9. Following consultations with Member States, the Co-Chairs have organized the workshops in panels as set out below. Under each panel, presentations will be followed by discussions between and among delegations and panellists. The panels listed below are intended to provide a forum for exploring any relevant aspect of the panel topics in greater depth and specificity, without presupposing any outcomes of the deliberations of, and without reiterating discussions in, the Working Group. Issues and questions, as proposed by the Co-Chairs, are listed for each panel as non-exhaustive illustrations of the types of issues that participants may seek to discuss during each panel, as those issues relate specifically to marine genetic resources from areas beyond national jurisdiction, on the one hand, and conservation and management tools in areas beyond national jurisdiction, on the other hand. It is understood that questions relating to existing legal frameworks, including the United Nations Convention on the Law of the Sea, that could be raised would provide a factual understanding of the instruments that may be relevant as an important part of the information-gathering exercise of the workshops.

Workshop 1 — Marine genetic resources (2-3 May 2013)

2 May, morning

Panel 1 — Meaning and scope; extent and types of research, uses and applications (10-11.30 a.m.)

(a) Meaning and scope

10. Under this theme, it is proposed that questions under consideration may include: What is understood by the term "marine genetic resources"? What is the

relationship between "marine genetic resources", "biological resources" and "genetic material"? What are derivatives and products? What implications does a specific meaning or scope have? Is there a distinction between marine genetic resources from areas within national jurisdiction and from areas beyond national jurisdiction from a scientific and practical point of view? How do endemism, migration and colonization impact the meaning and scope?

(b) *Extent and types of research, uses and applications*

11. Under this theme, it is proposed that questions under consideration may include: What are the different sectors that utilize marine genetic resources? What is the extent to which marine genetic resources from areas beyond national jurisdiction are used by various sectors? What is the main form of utilization of marine genetic resources or information about those resources (e.g., in situ, *ex situ* or *in silico*) by sector? For each form of utilization, how much raw material is required? Which organisms are used by various sectors? What are the different arrangements in place for the undertaking of research on, and uses of, marine genetic resources beyond areas of national jurisdiction (e.g., consortia of research institutions; "mixed" consortia comprising research institutions and private enterprises; single research institutions; or single private enterprises)? What is the main source of funding for research on marine genetic resources beyond areas of national jurisdiction? What are the different steps in research, utilization and application? What is the importance of each step in adding value to the process? What is the probability of commercial application? What is the relationship between marine scientific research and commercial exploitation following the identification of a promising lead?

Panel 2 — Impacts and challenges to marine biodiversity beyond areas of national jurisdiction (11.30 a.m.-1 p.m.)

12. It is proposed that this panel focus on impacts and challenges related to marine genetic resources. In particular, questions under consideration may include: What activities impact marine genetic resources beyond areas of national jurisdiction, and what are the specific impacts? What is the function of marine genetic resources in the marine ecosystem? Why is it important to preserve genetic diversity? How is genetic diversity impacted? Who are the stakeholders and what methods have been most successful in identifying and mobilizing relevant stakeholders? What tools are available to preserve genetic diversity and prevent genetic erosion? What are the challenges in implementing these tools?

2 May, afternoon

Panel 3 — Technological, environmental, social and economic aspects (3-4.30 p.m.)

13. Under this theme, it is proposed that questions under consideration may include: What infrastructure, technologies and type of expertise are needed to access and use marine genetic resources from areas beyond national jurisdiction? What are the potential environmental impacts of activities related to marine genetic resources? Do environmental impacts differ based on the target organisms and/or location? Are environmental impact assessments currently implemented? What are the social benefits of research, uses and applications of marine genetic resources of areas beyond national jurisdiction? What are the costs incurred and the revenues generated from activities related to marine genetic resources of areas beyond national jurisdiction?

Panel 4 — Access-related issues; Types of benefits and benefit-sharing (4.30-6 p.m.)

(a) Access-related issues

14. Under this theme, it is proposed that questions under consideration may include: What are the different types of access to marine genetic resources and to information about those resources (e.g., samples for in situ and *ex situ* access, data for *in silico* access)? What are the challenges and opportunities of each type of access? Does this vary based on the different types of access? Can access *ex situ* and *in silico* be considered as part of benefit-sharing? How are data handled? Is standardization of data possible to facilitate access? How many and which entities currently access marine genetic resources of areas beyond national jurisdiction? How is access addressed in different maritime areas? What sources of information are available regarding current activities in situ? How can access be monitored?

(b) Types of benefits and benefit-sharing

15. Under this theme, it is proposed that questions under consideration may include: What are the types of monetary and non-monetary benefits? To what extent is benefit-sharing taking place at a global, regional and national level? What are the existing and potential benefit-sharing mechanisms? What are their advantages and disadvantages (e.g., potential impacts on research)? How can they be adjusted to the specific case of marine genetic resources of areas beyond national jurisdiction? Can the origin/provenance of genetic resources be tracked, and how? Is there a role for disclosure of origin? How is disclosure of origin achieved with regard to marine organisms?

3 May, morning

Panel 5 — Intellectual property rights issues (10-11.30 a.m.)

16. Under this theme, it is proposed that questions under consideration may include: What are the main intellectual property rights tools used in relation to inventions based on marine genetic resources from areas beyond national jurisdiction? What are the main trends relating to patenting (e.g., upstream or downstream patents, use of exceptions and exemptions) relating to inventions based on marine genetic resources from areas beyond national jurisdiction and copyrights relating to published material (e.g., databases) on marine genetic resources? How are patent criteria applied at the national level? What are geographic indications? What are open source approaches? How can the origin/provenance of genetic resources from areas beyond national jurisdiction be tracked? What is disclosure of origin? Can disclosure of origin be added to good practice of the research community in relation to marine genetic resources from areas beyond national jurisdiction? What is the experience in application of intellectual property rights with regard to marine organisms and what are its implications?

Panel 6 — Global and regional regimes on genetic resources, experiences and best practices (11.30 a.m.-1 p.m.)

17. Under this theme, it is proposed that questions under consideration may include: Which regimes, experiences and best practices related to genetic resources are in place? What are their principles and main characteristics? What lessons can be learned from existing regimes, experiences and practices?

3 May, afternoon

Panel 7 — Exchange of information on research programmes regarding marine biodiversity in areas beyond national jurisdiction (3-4.30 p.m.)

18. Under this theme, it is proposed that questions under consideration may include: What practices exist with regard to exchange of information on research programmes? To what extent are the results of scientific research disseminated? Are there mechanisms in place to share information on research results relating to marine genetic resources? What are the modalities of those mechanisms (e.g., is information exchange restricted or free)? What policies and initiatives exist to promote such exchange of information? What are the challenges in exchanging information? How could exchange of information be enhanced?

Panel 8 — International cooperation and coordination; Capacity-building and the transfer of marine technology (4.30-6 p.m.)

(a) International cooperation and coordination

19. Under this theme, it is proposed that questions under consideration may include: What is the practice in relation to cooperation and coordination? What are the current means of cooperation and coordination? What is the nature of the arrangements currently in place for the undertaking of research on marine genetic resources from areas beyond national jurisdiction (e.g., global, regional or national; public or private or public-private)? How can cooperation be effected for material found in areas both within and beyond national jurisdiction? What is the level of cooperation between institutions from developed and developing countries? What are the challenges in the effective participation in activities related to marine genetic resources of areas beyond national jurisdiction? What are the respective roles of North-South and South-South cooperation? What is the role of different stakeholders in the promotion of information-exchange and research?

(b) Capacity-building and the transfer of marine technology

20. What are the capacity needs for access to, and use of, marine genetic resources of areas beyond national jurisdiction? What are the different levels of capacities among States? What are the various forms of capacity-building? What is the nature of the arrangements currently in place for the transfer of marine technology? What are the challenges to effective cooperation and coordination and transfer of marine technology? What mechanisms may be implemented to address those challenges?

Workshop 2 — Conservation and management tools, including area-based management and environmental impact assessments (6-7 May 2013)

6 May, morning

Panel 1 — Key ecosystem functions and processes in areas beyond national jurisdiction (10-11.30 a.m.)

21. Under this theme, it is proposed that questions under consideration may include: What ecosystem functions and processes exist in areas beyond national jurisdiction? Among these, what are key functions and processes? Are they unique and how do they differ from those ecosystem functions and processes in areas within national jurisdiction? Do ecosystem functions and processes have a regional

or a global scale? Are there linkages or interactions between the ecosystem functions and processes in areas beyond national jurisdiction and within areas of national jurisdiction? Are there significant differences between ecosystem functions and processes on the seabed and those in the water column? How do they interact? What are the gaps in our knowledge of these ecosystem functions and processes?

Panel 2 — Impacts and challenges to marine biodiversity beyond areas of national jurisdiction (11.30 a.m.-1 p.m.)

22. Under this theme, it is proposed that questions under consideration may include: Which human activities currently taking place in areas beyond national jurisdiction may impact marine biodiversity? What are the impacts of these human activities? What are the gaps in our knowledge of the impacts? Can the extent of impacts be predicted? Do the impacts have a regional or a global scale? Where do they originate from (e.g., seaborne or land-based)? Do they vary in time? Can the impacts originating within national jurisdiction be confined to prevent their spreading to areas beyond national jurisdiction? Do areas beyond national jurisdiction present unique factors of vulnerability or resilience? What are the challenges in monitoring, predicting and mitigating the impacts? How are those impacts addressed in practice? How do these impacts interact? Are these impacts irreversible? Can these impacts be quantified in financial terms? Are there viable alternatives to the activities that create adverse impacts? Are there positive impacts that can offset, reverse or mitigate the negative impacts? Are there potential user conflicts in areas beyond national jurisdiction and how are they addressed in practice? What methods have been most successful in identifying and mobilizing relevant stakeholders?

6 May, afternoon

Panel 3 — New and emerging uses of and experimental activities in areas beyond national jurisdiction (3-4.30 p.m.)

23. Under this theme, it is proposed that an overview of new and emerging uses of and experimental activities in areas beyond national jurisdiction be presented with a view to understanding trends and implications for the conservation and sustainable use of marine biodiversity beyond areas of national jurisdiction.

Panel 4 — Types of area-based management tools (4.30-6 p.m.)

24. Under this theme, it is proposed that questions under consideration may include: What are the types of area-based management tools? What lessons have been learned from applying these tools, in particular within national jurisdiction? What are the challenges and opportunities in applying these tools in areas beyond national jurisdiction?

7 May, morning

Panel 5 — Assessments of sectoral and cumulative impacts (10-11.30 a.m.)

25. Under this theme, it is proposed that questions under consideration may include: How are sectoral and cumulative impacts on marine biodiversity in areas beyond national jurisdiction assessed? Are there lessons learned and best practices in assessments? Are there assessments of the effectiveness of specific forms of area-based management tools to address specific sectoral impacts?

Panel 6 — Technological, environmental, social and economic aspects (11.30 a.m.-1 p.m.)

26. Under this theme, it is proposed that questions under consideration may include: What infrastructure and type of expertise are needed to conserve and sustainably use marine biodiversity? What are the social benefits of conservation and sustainable use of marine biodiversity? Is traditional knowledge relevant in the development of conservation and management tools for marine biodiversity in areas beyond national jurisdiction? What are the costs incurred and the revenues generated from conservation and sustainable use of marine biodiversity in areas beyond national jurisdiction? What methods have been most successful in identifying and mobilizing relevant stakeholders?

7 May, afternoon

Panel 7 — Existing regimes, experiences and best practices (3-4.30 p.m.)

27. Under this theme, it is proposed that an overview of the existing regimes and experience and best practices be presented with a view to considering issues such as: What are the principles and main characteristics of existing regimes, experiences and practices? What lessons can be learned from them? What are the benefits and challenges in enhancing coordination among regimes?

Panel 8 — Exchange of information on research programmes regarding marine biodiversity in areas beyond national jurisdiction; International cooperation and coordination; Capacity-building and the transfer of marine technology (4.30-6 p.m.)

(a) Exchange of information on research programmes regarding marine biodiversity in areas beyond national jurisdiction; International cooperation and coordination

28. Under this theme, panellists and participants are encouraged to share information on existing research programmes, as well as on international cooperation and coordination. It is proposed that questions under consideration could include: What are the current means of cooperation and coordination, including the existing financial mechanisms, under international organizations? What is the nature of current practices for the undertaking of conservation and management (e.g., global, regional or national; public or private or public-private)? How can cooperation be effected for conservation and management in areas beyond national jurisdiction? What is the level of cooperation between institutions from developed and developing countries? What are the challenges in the effective participation in activities related to conservation and management of marine biodiversity of areas beyond national jurisdiction? What are the respective roles of North-South and South-South cooperation? What is the role of different stakeholders in the promotion of information-exchange and research?

(b) Capacity-building and the transfer of marine technology

29. What are the capacity needs to apply conservation and management tools, including area-based management and environmental impact assessments? What are the capacity-building activities that assist in applying those tools? What is the nature of the arrangements currently in place for the transfer of marine technology? What are the challenges to effective cooperation and coordination and transfer of marine technology? What mechanisms can be implemented to address those challenges?